April 1943

TECHNOLOGY REVIEW

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Get the "GRINDLINS" out of your Tool Room



Grindlins in the tool room are cousins of the Gremlins that cut capers with airplane pilots.

"Make the old wheel hog off the metal," suggests Mister Grindlin. "Pipe down," says experience, "the one way to assure uniform tooth height when grinding milling cutters is by taking light finishing cuts of not more than one-half a thousandth per pass."

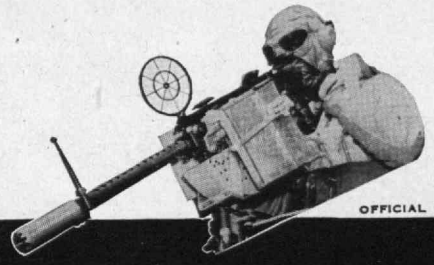
Don't let Grindlins heckle your workers. There is a Norton Handbook on Tool Room Grinding, 176 pages of helpful information and illustrations, that will be definitely useful to the tool room worker who is new to his job.

NORTON COMPANY • **Worcester, Massachusetts**

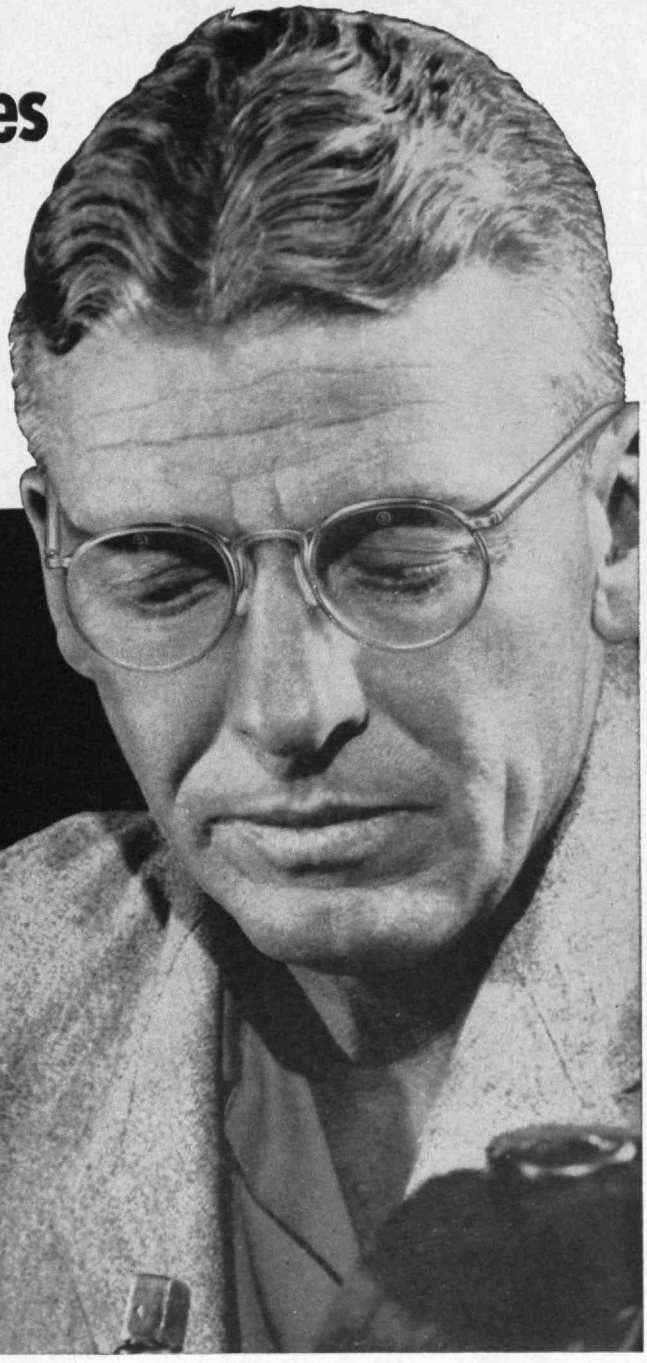
Behr-Manning Division—Troy, N. Y.

NORTON ABRASIVES

Keep Your Workers' Eyes Trained on their Work



OFFICIAL NAVY PHOTOGRAPH



WITH

AMERICAN OPTICAL GOGGLES

We need more than our workers' hands to win this war . . . we also need their *eyes*. Yet, for lack of proper goggles, industrial eye accidents are *still* occurring at an alarming rate . . . *still* costing our valiant fighting men much equipment that they need to smash the enemy.

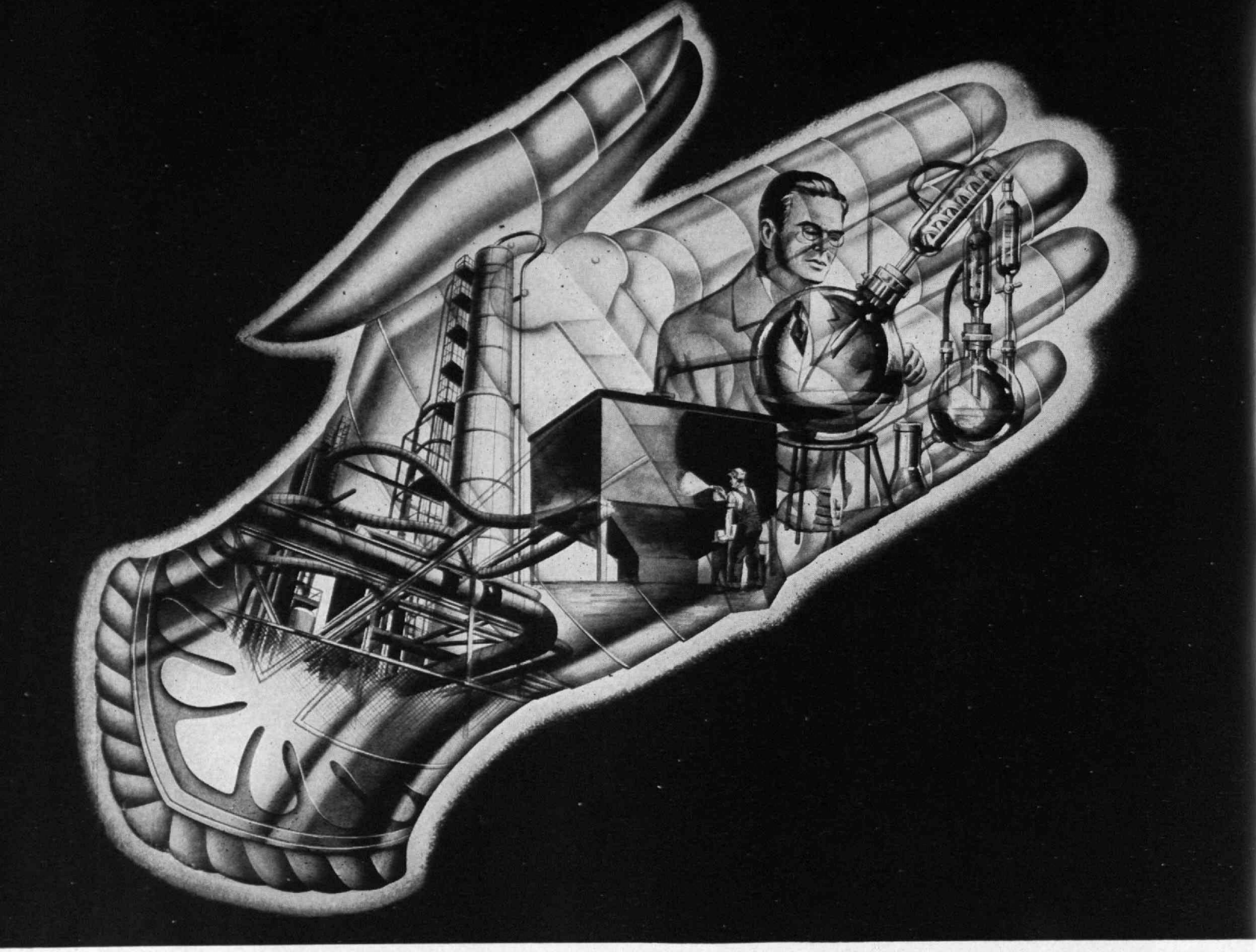
Put on an offensive now to stop eye accidents in *your* plant. American Optical Company, pioneer manufacturer of products to aid and preserve vision, offers you the eye protection equipment and complementary services that your plant needs to protect man-power for war-power. AO Goggles are scientifically designed to give maximum possible protection . . . and workers find them comfortable to wear. Have your Safety Director get in touch with the nearest American Optical Branch Office.

American Optical

COMPANY

SOUTHBRIDGE, MASSACHUSETTS

THE TECHNOLOGY REVIEW, April, 1943. Vol. XLV, No. 6. Published monthly from November to July inclusive at 10 Ferry Street, Concord, N. H. Publication date: twenty-seventh of the month preceding date of issue. Annual subscription $3.50; Canadian and foreign subscription $4.00. Entered as second-class matter at the Post Office at Concord, N. H., under the Act of March 3, 1879.



TYGON *protects the fingers of the iron fist*

THE mechanical fingers that move America's iron fist must not be stilled for a single moment . . . from these fingers flow the planes, the ships, the tanks, the guns, on whom victory depends.

There dare be no joints stiffened by corrosion! These moving fingers must be kept free!

Tygon, one of America's newest and most versatile materials, is effectively aiding designers and engineers everywhere in retarding the action of corrosion on buildings and plant equipment. In arsenals and shipyards, in airplane and tank factories, in chemical and metallurgical plants, the life of irreplaceable machines and equipment is being indefinitely prolonged through the use of Tygon anti-corrosive protection.

For Tygon is unaffected by more than 90% of the corrosive elements which play hob with industry. The chemicals that work havoc with metals, that quickly destroy steel, that eat through glass, have little effect on this amazing synthetic. Sun, air, moisture, and time—levelers of most material things—leave Tygon virtually untouched.

Tygon possesses the rare virtue of "flexibility of application," retaining its basic corrosion-resistant properties through a wide range of physical forms. It is made into flexible, resilient sheets for tank linings or for gasketing; into liquid for use as a paint or for impregnation of porous materials; into light, flexible tubing, or into easily machined solid rods. Tygon may be readily molded into intricate shapes possessing excellent tensile strength plus remarkable durability and corrosion-resistance.

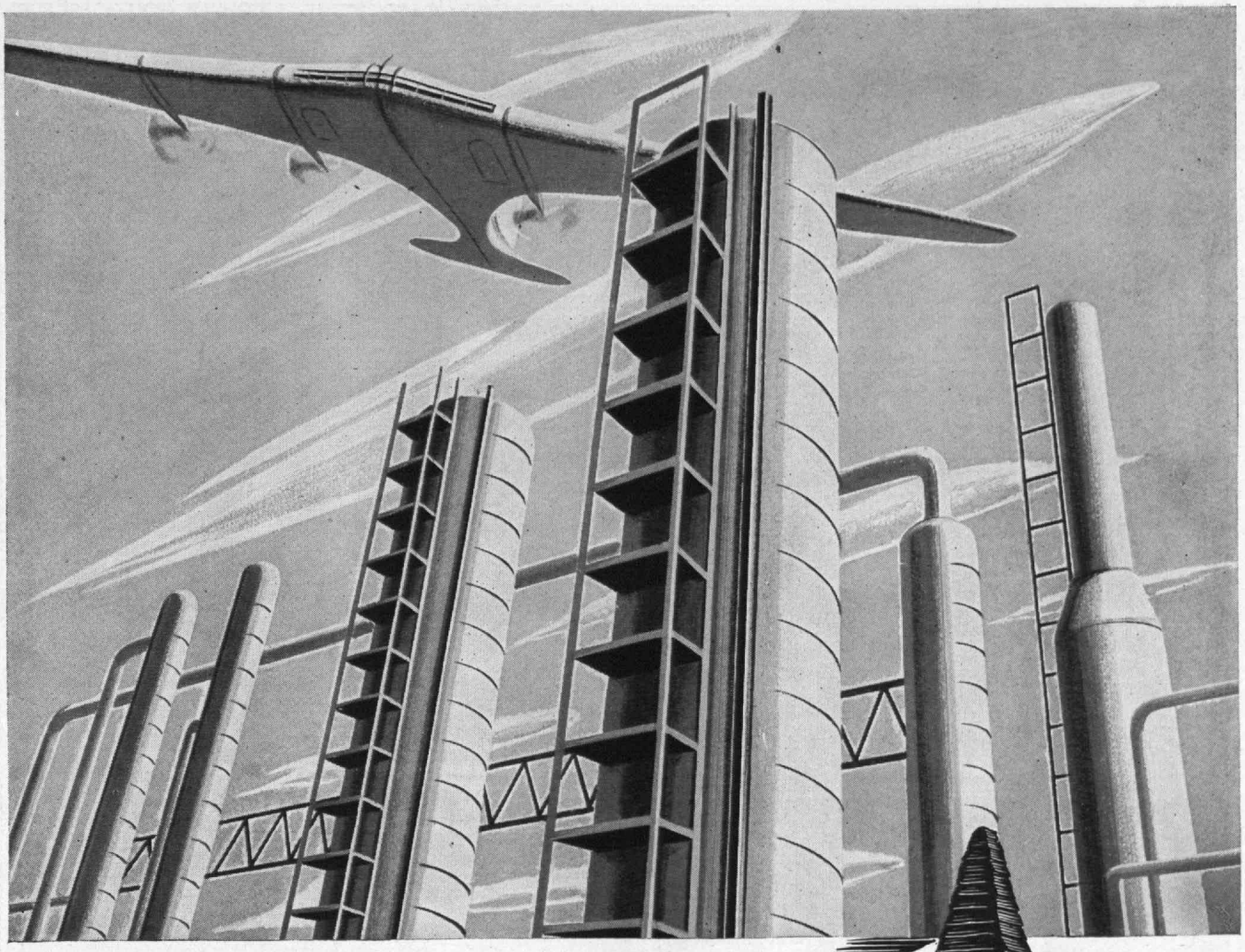
Would you like to learn more about this versatile material? Write today for Bulletin 1621.

U. S. STONEWARE

AKRON, OHIO

IN CANADA: CHAMBERLAIN ENGINEERING, LTD., MONTREAL

ENGINEERS • MANUFACTURERS • ERECTORS OF CORROSION-RESISTANT EQUIPMENT





Looking ahead from a long way back

From the early days of "Colonel" Drake and "Coal Oil Johnny," the chemistry of oil has been destined for great things. Greater even than the high-octane gasoline which today is propelling planes across the sky at 400 miles per hour. Greater than butadiene and toluene.

So, too, with the chemistry of alcohols, phenols, esters, ketones and other organic compounds.

The greater things are sure to come. Many are already germinating—secretly in some instances—and inevitably heading toward enriching the world of tomorrow.

It takes background and experience to put into successful production the products chemical research has perfected. It takes far-reaching facilities to design and build processing equipment that can be expected to operate efficiently.

Badger perspective looks through four generations toward process engineering and plant construction in many future fields. Though busy on gasoline, rubber, T.N.T. and other war-aid projects, Badger is nevertheless preparing for post-war undertakings. . . . Manned with engineers, designers and draftsmen to convert the new miracles of science into realities. . . . Equipped to plan, build, and to supervise the initial operations of complete manufacturing units.

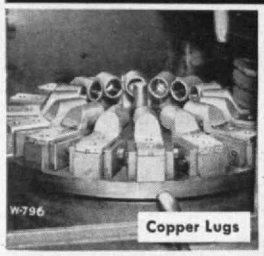
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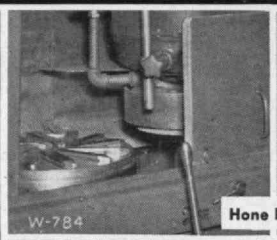
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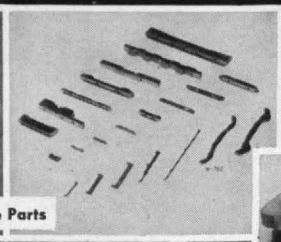
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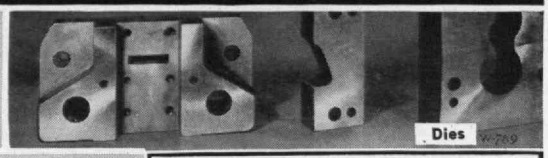
PROCESS ENGINEERS AND CONSTRUCTORS FOR THE CHEMICAL, PETROLEUM AND PETRO-CHEMICAL INDUSTRIES

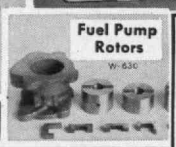
"PUT IT ON THE BLANCHARD"

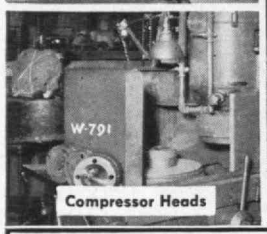


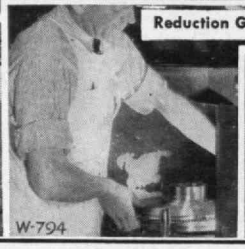




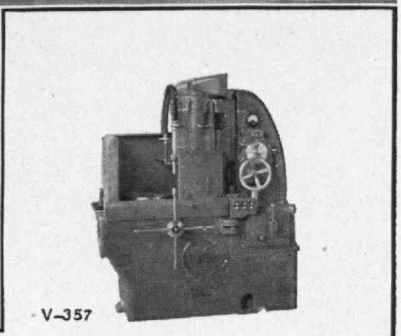






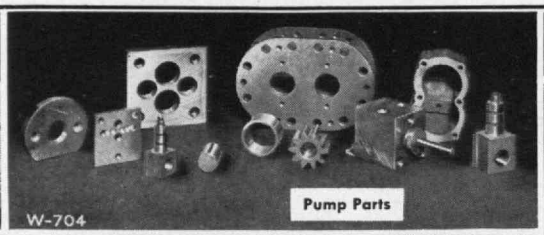




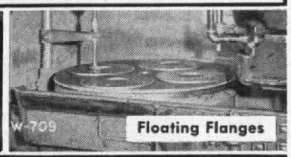


EXAMPLES OF WORK DONE ON THE NO. 11 BLANCHARD SURFACE GRINDER







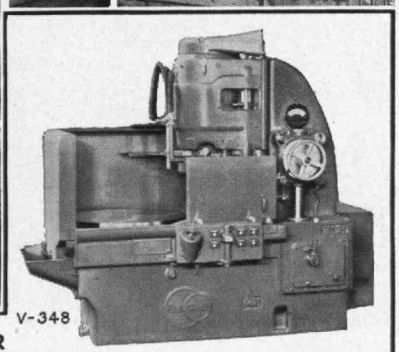




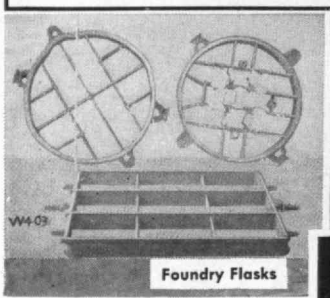


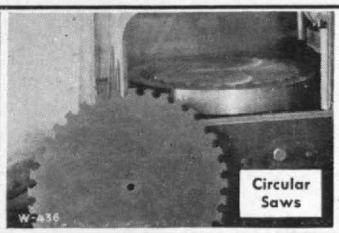






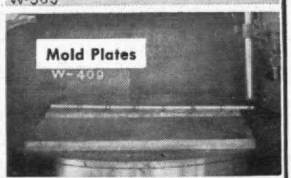
EXAMPLES OF WORK DONE ON THE NO. 18 BLANCHARD SURFACE GRINDER



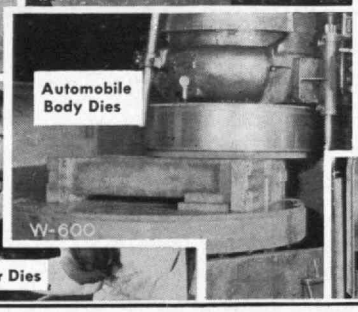




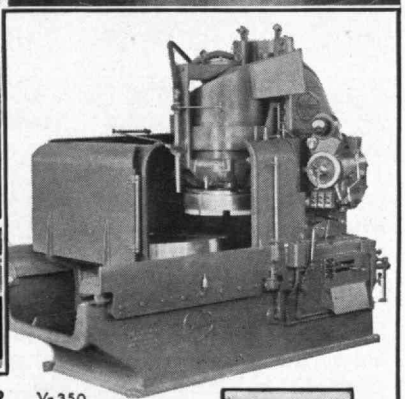












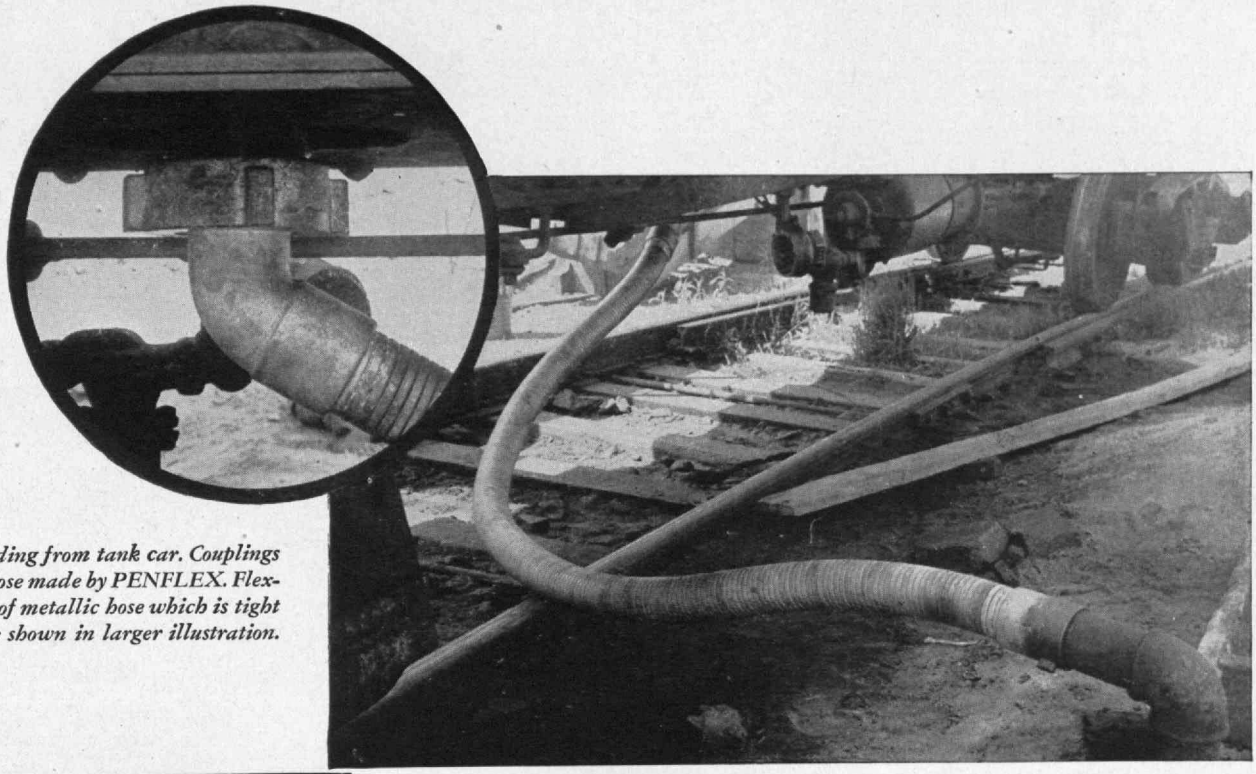
EXAMPLES OF WORK DONE ON THE NO. 27 BLANCHARD SURFACE GRINDER

The BLANCHARD MACHINE COMPANY

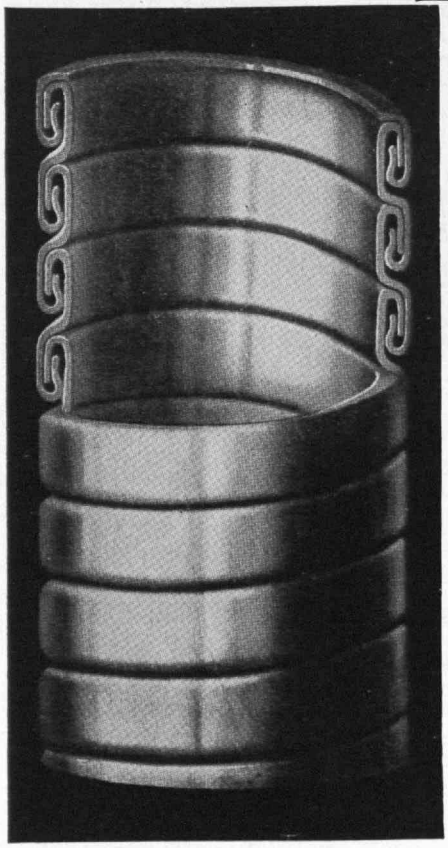
64 STATE STREET, CAMBRIDGE, MASS., U. S. A.



SEND FOR THIS WORK BOOK..



Unloading from tank car. Couplings and Hose made by PENFLEX. Flexibility of metallic hose which is tight as pipe shown in larger illustration.



Four-Wall Interlocked Construction in sizes 1" to 18" I.D. In various metals and alloys . . . coated and uncoated.

Here is Hose to Handle *Styrene* and other Synthetics

"Double interlocked type hose is best suited for handling Styrene since it contains what is commonly known as a benzine ring." So states a letter from a large synthetic rubber manufacturer who ought to know, since he also manufactures other mechanical rubber products.

PENFLEX is wound in a continuous helix, from strips of heavy metal which resists attack from a wide range of liquids. Four metal walls—*tight as pipe*—reduce danger of puncture; four metal walls interlock to resist crushing.

Great flexibility, accomplished by PENFLEX sliding, interlocking joint construction—*the metal itself does not bend*—provides freedom from kinks.

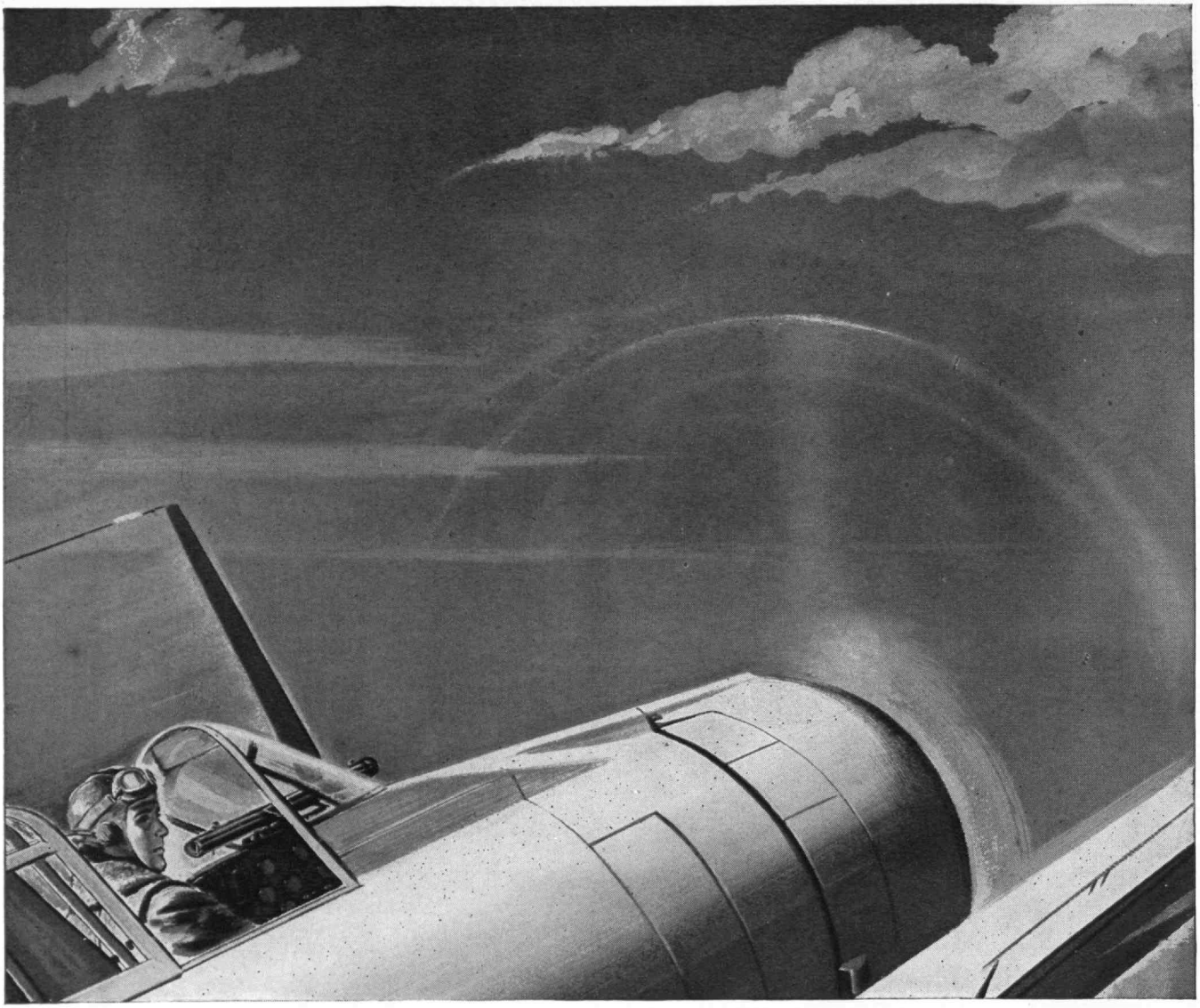
Perhaps you, too, have an unusual problem in handling liquids. If so, write our engineering staff. You can get helpful data and information gathered through 40 years' experience in research and manufacture of flexible metallic hose and tubing.

PENFLEX INTERLOCKING METAL HOSE

PENNSYLVANIA FLEXIBLE METALLIC TUBING CO.

7211 Powers Lane, Philadelphia, Pa.

ESTABLISHED 1902



Up there alone, hobnobbing with the scudding clouds in the white-flecked azure, what's in the back of his mind, while he scans an ocean monotonously empty?

There are long and glamorless stretches to patrolling. Plenty of time to think—in a detached way that doesn't distract his watchful eyes from sea or instrument panel..... Plenty of time to see a sunlit street, a campus path, a breath-catching moment of bashful ardor under a genial moon. Whatever the image, it stands against the background of coming home to opportunity, to work, to fulfillment.

And that's what it will be if production is pushed, if paydays are bond-days and if spare hours are devoted to plans for supplying post-war markets—and thereby a job and home for this boy.

It's his due There'll be a hunger for the goods we've done without, but they'll not be identical goods. They'll be improved or entirely new. Made, quite probably, with machines that have yet to be built—machines that are typical of American ingenuity—perhaps even like some of those developed and made here at FIDELITY and described in "Facilities."

Write for a copy of this illuminating book.

ARMY E NAVY

32 YEARS' EXPERIENCE

Designers and Builders of Intricate, Automatic Precision Machines

FIDELITY MACHINE COMPANY

3908-18 FRANKFORD AVENUE, PHILADELPHIA, PA.

Wartime readjustments . . . #7



NEVER AGAIN WILL BILL COLEMAN TRY TO BUY A TRAIN TICKET AT THE LAST MINUTE!

The trip is urgent, the line is long, and the time is short. Bill's at the end of the line, and almost at the end of his patience.

He should have known better. You can't put things off in wartime and expect them to go smoothly. You've got to plan in advance — whether you are buying tickets or life insurance.

Remember that insurance premium dollars go to work for America and promote the war program, directly or indirectly, in every vital field. So that, if you do plan your insurance program now, you can increase your war contribution and your family's protection at the same time. If you wait, war strain or accident may make you uninsurable.

Taxes, War Bonds, life insurance . . . these three are basic in all budgets now. These three help win the war and check inflation. Whatever readjustments they require are well worth while. Any New England Mutual representative will be glad to help you — with friendly, practical suggestions that will make every dollar do its wartime duty.

New England Mutual contracts meet present-day needs because:

1. **DIVIDENDS** begin at the end of the *first* year.
2. **CASH VALUES** begin at the end of the *second* year.
3. **A PREMIUM LOAN** is available beginning with the *second* annual premium.

Let a Career Underwriter show you how valuable these features can be

New England Mutual

Life Insurance Company of Boston

George Willard Smith, President *Agencies in Principal Cities Coast to Coast*

The First Mutual Life Insurance Company Chartered in America—1935

Don't put off life insurance, either!

Traveling, marketing, remodeling — almost *anything* you do in wartime must be planned in advance — or you're out o' luck.

That's especially true of life insurance. It takes *very* careful planning to cover the needs that war can create—or to provide for the financial adjustments that may be necessary. You can be sure of getting the *right* kind of planning *only* from able underwriters.

A number of them are listed below. They're alumni of your college and they talk your language. They are also trained representatives of the First Mutual Life Insurance Company Chartered in America.

Out of their experience you'll get *practical*, constructive suggestions. They'll help you make the most of your limited life insurance dollars — help you protect your present policies with premium loans if necessary. Check your protection *now when you need it most.*

RAYMOND P. MILLER, '18
Salem

▪

ARTHUR C. KENISON, '19
Boston

▪

BLAYLOCK ATHERTON, '24
Nashua

If none of these folks is near you, you can get similar service at the New England Mutual office in your city. Or use the coupon below, and the Home Office will have a competent representative counsel with you. No obligation, of course.

NEW ENGLAND MUTUAL LIFE INSURANCE COMPANY OF BOSTON
Box I-2, 501 Boylston St.
Boston, Mass.

Please have one of your representatives get in touch with me, without obligation on my part.

Name _____

Street _____

City _____

State _____

USE THE DUAL FEED RATE



for *Greater* Milling Production —on No. 12s

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Brown & Sharpe Mfg. Co.
Providence, R. I., U. S. A.

Double or **halve** the selected cutting feed automatically at any desired point in the cut.

These savings frequently cut production time in half — sometimes more — on your No. 12 Plain Milling Machines.

BROWN & SHARPE

EQUIPMENT FOR THE CHEMICAL INDUSTRIES

Made by ARTISAN from any metal

Autoclaves
With or without agitators
Steam, Dowtherm, Electric or Gas Heated

Condensers and Heat Exchangers
Single Pass and Multipass

Distillation Equipment
Continuous Rectifying
Batch Rectifying
Steam Distillation
Plain Evaporative

Evaporators
Horizontal Tube
Vertical Tube
Basket Type
Forced Circulation

Jacketed Kettles
Hemispherical or Standard Dished Heads

Pipe, Pipe Coils, and Bends
Large fabricated pipe, particularly copper, monel, and stainless steel. All types of processing piping
Pipe coils — in any metal — helical, zigzag, pancake, from all sizes of pipe and tubing

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Plain, jacketed, or with coils. Agitated — horseshoe, turbine, or paddle-blade type

Tanks
All types and sizes

ARTISAN METAL PRODUCTS INC.
20 SULLIVAN SQUARE BOSTON, MASS.
JAMES DONOVAN '28, *Treasurer and General Manager*

THE TABULAR VIEW

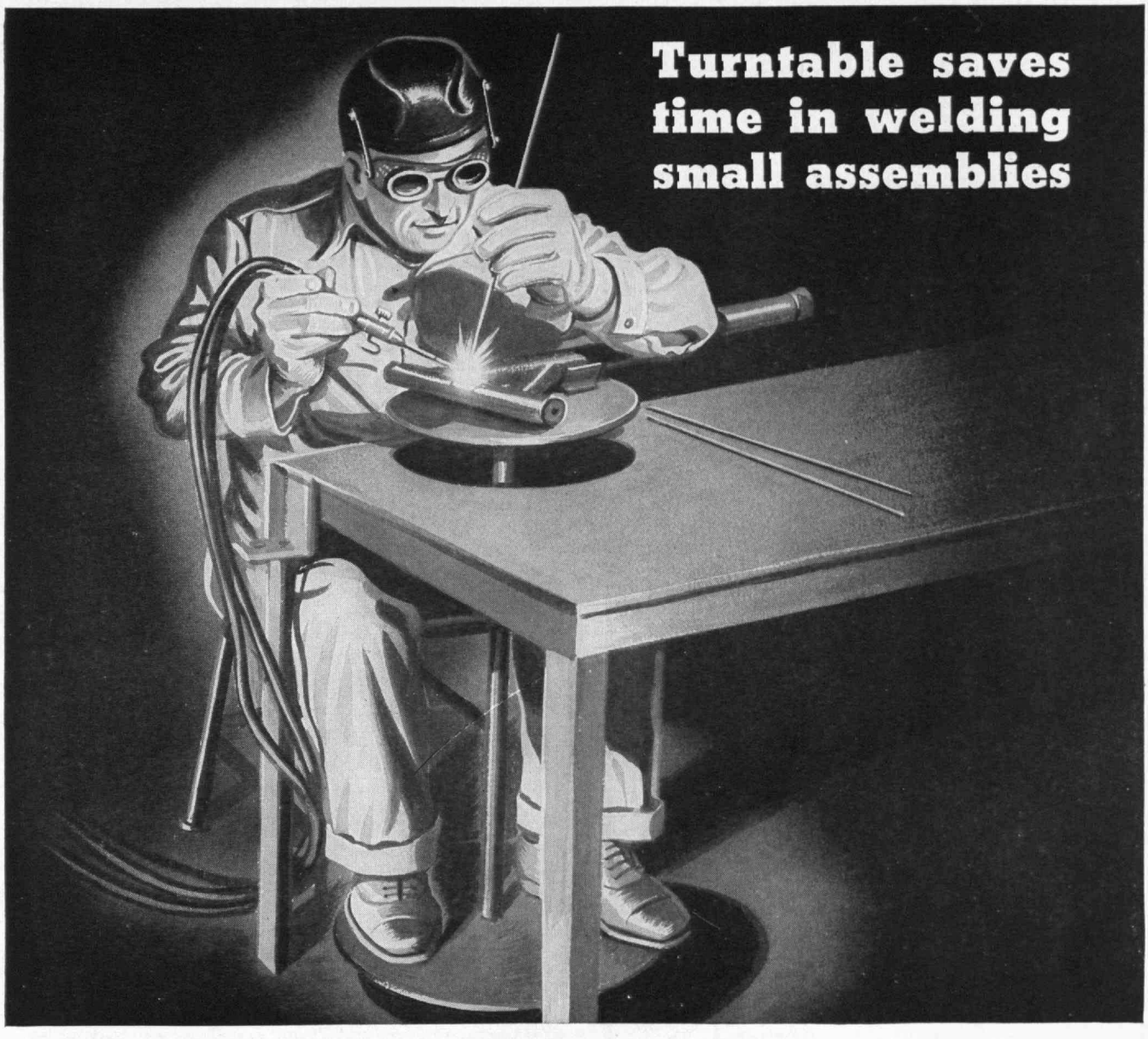
Limits and Logic. — Dealing vigorously with a subject whose usual vital importance is enhanced by wartime conditions, the address delivered by ROBERT E. WILSON, '16, at the time of his receiving the 1943 Perkin Medal of the Society of Chemical Industry, is a trenchant discussion of various proposals for revision of the American patent system. The address has appeared in full in *Industrial and Engineering Chemistry.* Through the courtesy of the Society of Chemical Industry and of the American Chemical Society, holder of the copyright, The Review commences in this issue (page 307) an article drawn from Dr. Wilson's text. His appraisal of the values in our present way of correlating the interests of inventors and of society by means of a system of limited monopoly, and his analysis of the logic of constituted limits as opposed to sundry plans for compulsory licensing and other devices, are penetrating. Formerly director of the Research Laboratory of Applied Chemistry at the Institute, Dr. Wilson, who is president of the Pan American Petroleum and Transport Company, is himself an inventor holding numerous patents on chemical and engineering processes.

Bear Believers. — From NEILL JAMES, who lived among them in 1940 on the island of Hokkaido off the coast of Siberia, comes a description (page 310) of the Ainus, white aborigines whose present status is a measure of the ability, or lack of it, which the Japanese possess as overlords of a colonial empire. Miss James, whose delight is adventuring hither and yon, last wrote for The Review in December, 1941, reporting on her observations of the Laplanders.

Accommodation. — Adjustment of the economic structure of a nation to the appearance of new products is discussed in this issue (page 313) by RALPH E. FREEMAN, Professor of Economics and Head of the Department of Economics and Social Science at Technology. Widely experienced in practice as well as theory, Professor Freeman writes understandingly of problems which industry and society must expect to confront after the war.

Life. — From his variegated investigations, M. F. ASHLEY MONTAGU, anatomist, anthropologist, and generally interested observer, writes (page 315) on the attitude of science toward war as it has been expressed by noted scientists of centuries past. Professor Montagu is a member of the faculty of the Hahnemann Medical College and Hospital of Philadelphia.

Spinners. — Spring's coming on brings with it manifold interests for the observant. One of these is recounted for The Review (page 304) by CHARLES H. BLAKE, '25, Associate Professor of Zoology at the Institute, whose Thoreauvian cast of mind fits him well for the undertaking.



Information supplied by an Industrial Publication

Several means are being applied industrially to save time and reduce fatigue of welders working on heavy jobs. Positioning tables, rotating jigs and similar devices for handling heavy or bulky assemblies are quite generally used.

One aircraft manufacturer has adopted a similar idea for welders working on small sub-assemblies. The assemblies are light, and joints are usually quite accessible. But moving the assemblies by hand does occasion some delay.

This is obviated by mounting the work on a small turn table somewhat resembling an old style potter's wheel. The turn table is quite simple, consisting of two round plates mounted on a common shaft.

The upper plate carries the work, and is located at a convenient height above a work table. The lower plate is a few inches above the shop floor. It is positioned so that the operator's feet rest on it comfortably.

Thus, when the operator wishes to move the work, he simply "indexes" the lower table by foot power. The weight of his feet on the plate is, however, sufficient to hold the whole turn table steady while he is welding any particular joint.

CLIMAX FURNISHES AUTHORITATIVE ENGINEERING DATA ON MOLYBDENUM APPLICATIONS.
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BATH
IRON WORKS
CORPORATION

Shipbuilders and
Engineers

•

BATH, MAINE

TRADE MARK
HEVI DUTY
REGISTERED U. S. PAT. OFFICE

Hevi Duty Electric Co.
Electric Furnaces
MILWAUKEE, WISCONSIN

Hevi Duty Precision Electric Heat Treating Furnaces are built in a large variety of types and sizes — for many heat treating operations — with temperature ranges to 2500° F. (1371° C.). They are standard production equipment in many national industrial plants.

Write for descriptive bulletins

GEORGE A. CHUTTER, '21
District Manager
90 West Broadway
New York

ELTON E. STAPLES, '26
District Manager
205 W. Wacker Drive
Chicago, Ill.

MAIL RETURNS

Devoured

FROM MAJOR ROBERT E. MATTSON, '26:

The November issue of The Review, which you sent me direct, arrived in the Middle East the first of February, and I have been devouring it ever since. It is the first American periodical that I have seen since I left the "old country," and therefore it was doubly welcome. Thanks a lot for sending it. I shall turn it over to Bill Drummey, '16, when I finish it, and that means *really* finish it, even to all the class notes. . . .
A.P.O. 523, Care of Postmaster, New York, N. Y.

Corroboration

FROM FRANK S. MACGREGOR, '07:

I have just finished reading the article, "Unconscious Ambassadors," in your February issue. I feel that Mrs. Dodge is much too modest in writing her second paragraph, for I have lived five years in South America and find that her article applies just as well to that part of the Americas as it does to Central America. In fact, many of her comments and experiences are exactly the same as my own observations and experience. I hope that the article will have quite a general reading, particularly under present-day efforts to make the United States "Central and South America conscious."
Wilmington, Del.

Not through Free Gift

FROM WILLIAM A. RHODES, '12:

We read a great deal about new materials and new products which various firms have under development for the postwar world, and "Design Futures" by Clarence P. Hornung in the February Review is close to tops.

There is also, it seems to me, another subject beside the strict consideration of material things to which the business administrators of producing firms might equally well attend. For a determination seems to be growing throughout the world that, after the war, poverty and privation no matter where encountered are no longer to be tolerated. Consequently, any industrial postwar committee — and I imagine most firms have them by this time — might consider in relation to industrial operations and output (1) the abilities peculiar to impoverished peoples who, even aside from their willingness to work for low pay, are, for example, the best repetitious workers at simple tasks; and (2) the sort of goods which impover- (*Concluded on page 322*)

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The Goblin that works for America

THE INQUISITIVE alchemists of the Middle Ages were looking for silver. Repeatedly, they smelted certain ores and got a silvery-looking metal. But it was only *silvery-looking*. It never turned out to be silver. So the alchemists thought that a malicious spirit was thwarting them, and they called the strange metal Kobold, meaning goblin.

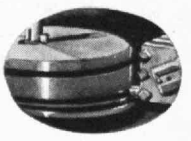
Today that same goblin, known in America as cobalt, has become one of this country's great fighting elements. Cobalt is alloyed with chromium and tungsten to make "Haynes Stellite" alloys which have the property of "red hardness." Metal-cutting tools made of these alloys keep on cutting even when red hot! Cobalt improves red hardness and toughness in other kinds of metal-cutting tools. Thus, cobalt has contributed greatly to the tremendous output of planes, tanks, guns, and other war materials.

Cobalt is also used to produce improved magnet steels. Permanent magnets of cobalt-tungsten steel are more powerful, and last longer. Permanent magnets are necessary in much electrical equipment.

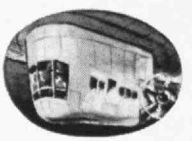
This country's cobalt formerly came from Belgium, where it was refined from African ores found in the Belgian Congo.

As war clouds loomed, and as accelerated American industry made rapid inroads on the stockpiles shipped out of Belgium during 1938 and 1939, ELECTRO METALLURGICAL COMPANY, a unit of UCC, designed and built facilities in this country for the Belgians. ELECTROMET now operates these facilities so that HAYNES STELLITE COMPANY, another Unit of UCC, and other American companies can have the cobalt they need for essential war work. Operations began in 1941. Today, these facilities annually produce more cobalt than was ever imported in any year previously.

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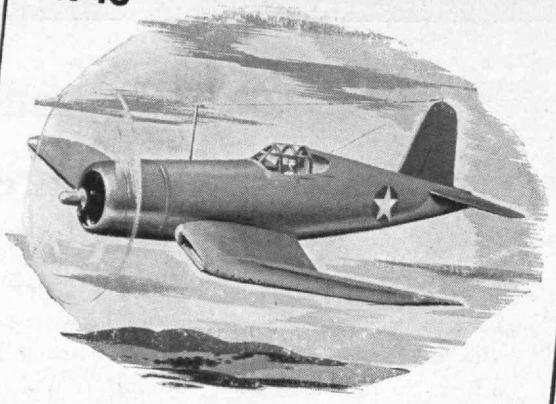
Trail Blazing in the Skies

1924



THE FIRST U.S. NAVY AIRPLANE to be built with duralumin structural members was the Martin MS-1, produced in 1924. These members were formed by Goodyear for the Glenn L. Martin Company. This important work was entrusted to Goodyear because of our previous experience in building duralumin keels for military airships – the first use of this metal-alloy by any private aircraft manufacturer in the United States.

1943



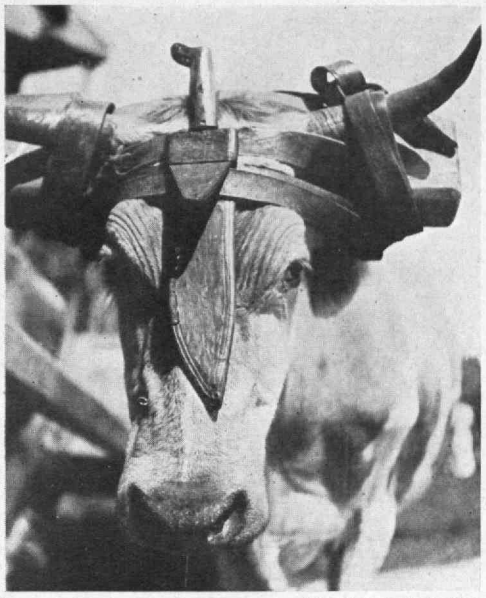
THE FASTEST NAVY AIRPLANE in service today is this Corsair fighter. This airplane is now also being built by Goodyear from specifications of the Chance Vought Division of United Aircraft Corporation, the Goodyear version being designated as the FG-1. Into the building of this all-duralumin ship goes all of Goodyear's long experience in fabricating metal aircraft structures. Although it is faster, longer-ranged and more powerfully armed than any other Navy fighter now in action, its weight is remarkably low for all that is packed in it – proof of superior design and construction.

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Severin from Three Lions

The master's machete gets a ride thus in Costa Rica.

VOLUME 45 NUMBER 6

THE TECHNOLOGY REVIEW

TITLE REGISTERED U. S. PATENT OFFICE

EDITED

AT THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY

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From a photograph by Claude E. Patch, '02

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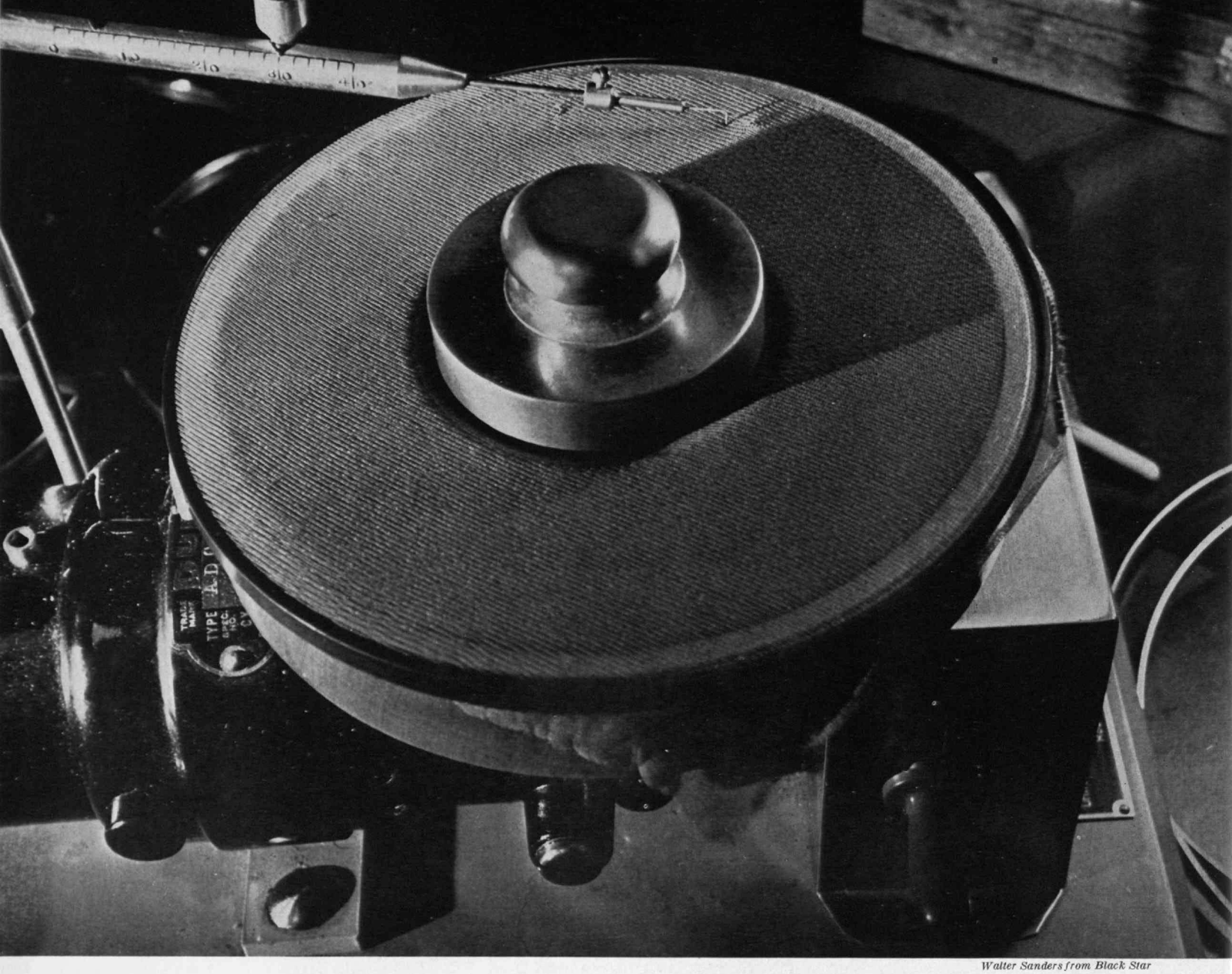
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Walter Sanders from Black Star

But how about runs? The serviceability of fabric knit from synthetic textile fibers is tested by this machine.

THE
TECHNOLOGY
REVIEW

Vol. 45, No. 6

April, 1943

The Trend of Affairs

Two Centuries After

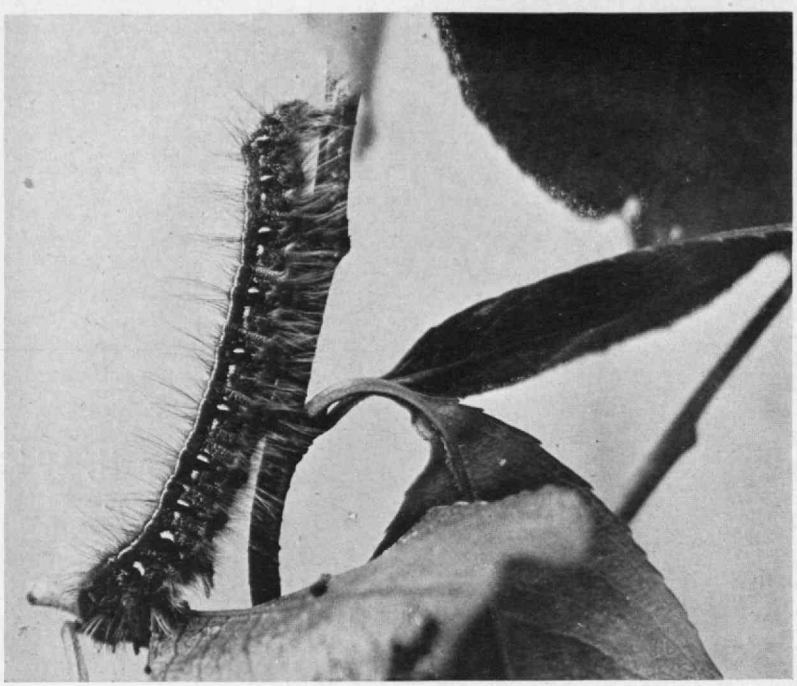
THIS month the people whose independence he declared and whose rights he safeguarded will dedicate a memorial building to Thomas Jefferson, third President of the United States and, with Franklin, first among her citizens in breadth of wisdom and range of human sympathy. The 200th anniversary of his birth on April 13, 1743, gives occasion for the establishment of this physical symbol of Americans' honor to him. Impressive and appropriate as it is, however, the Jefferson Memorial in Washington must be regarded in this year of war as only a slight and transitory thing in comparison to the realities through which the mind and heart of Thomas Jefferson have spoken to his countrymen down the years, and continue to speak.

In the Declaration of Independence, the Statute of Virginia for Religious Freedom, and the Bill of Rights, Jefferson long ago asserted and re-emphasized the four freedoms of the Atlantic Charter. In his care for the establishment of the University of Virginia, capsheaf of the system of public instruction which "as it was the earliest so it will be the latest, of all the public concerns in which I shall permit myself to take an interest," he substantiated by action his faith in the people as the only "safe depositary of the ultimate powers of society."

But Thomas Jefferson was not only philosopher and statesman. As architect, scientist, and engineer as well, he rejoiced in the exercise of intelligence, and in these undertakings likewise was not content with mere theorizing and closet practice. It was not enough, for him, to study and understand; to do and produce as expression of that understanding had necessarily to follow. Yet the organic unity of his life held all these activities in just relation to each other, so that the philosopher and statesman could and did speak even while the engineer and craftsman were at work.

This ordered fullness that marked Jefferson's life appears succinctly in a letter published in the *Transactions* of the American Philosophical Society, setting forth the requirements for the moldboards of plows. Toward the end of the paper, he commented on the then inchoate Napoleonic Wars: "I am fixed in awe at the mighty conflict to which two great nations are advancing, and recoil in horror at the ferociousness of man. Will nations never devise a more rational umpire of differences than force? Are there no means of coercing injustice more gratifying to our nature than a waste of the blood of thousands, and of the labor of millions of our fellow-creatures . . . ? Had the money which has been spent in the present war been employed in making roads and conducting canals of navigation and irrigation through the country, not a hovel in the remotest corner of the Highlands of Scotland, or mountains of Auvergne, would have been without a boat at its door, a rill of water in every field, and a road to its market town. Had the money we have lost by the lawless depredations of all the belligerent powers been employed in the same way, what communications would have been opened of roads and waters!"

In a paper read before the same society last fall, Dugald C. Jackson, Professor Emeritus of Electrical Engineering at Technology, speaking of this passage from Jefferson's moldboard letter, observed: "Thus Jefferson in 1798! Our today's paraphrase of the sentiment may be in nearly the same words, notwithstanding the increased population and the tremendously increased total wealth now in the world. Indeed, the increase in population and total wealth should make us more emphatic. The anthropologists tell us that fundamental changes of the human mind are deadly slow. The present state of the world makes demonstration. A reader of Tacitus cannot but be impressed that the political corruption and wickedness of the government and the



This is Malacosoma americana, *the eastern tent caterpillar, busy at its job of pruning, as the Bureau of Entomology and Plant Quarantine, United States Department of Agriculture, photographs it.*

dominant people of Rome near the opening of the Christian era are paralleled in shamelessness by the Hitlerism cult and its leaders today. Our usual rather superficial picture of civilization is too much founded on descriptions of cultures which were only partial civilizations because they failed to recognize a general mutuality of interest among men.

"Full civilization will come to us only when we have well developed material and intellectual well-being among large groups of people. To get this requires the contributions of engineering, as Jefferson infers. The establishment and maintenance of community life depend on engineering. Ethical and moral needs arise out of community relations to make civilization. Thus, true civilization is dependent on the fruits of engineering, but it cannot be brought to full embodiment any faster than the manifest intelligence of the people leads the procession toward it."

Co-operative Pruners

By Charles H. Blake

ONE of the less lovely signs of spring in New England is the appearance of the characteristic white nests of the eastern tent caterpillar, who has western tent-building cousins as well as forest-dwelling relatives who make no tents. In spite of the damage which the tent caterpillar can do to cherries and apples and in spite of the bedraggled appearance of the nests later in the spring, the structures are nonetheless worthy of study. As is well known, they occur always in the forks of the trees and are the work of a large number of caterpillars co-operating without any evident means of intercommunication and without any evident plan of operation. The story will be clearer, however, if we start at the very beginning, which is not the nest but the egg-laying.

The females, which are soft-brown moths with two diagonal white lines across each fore wing, lay their eggs in late July near the tips of cherry branches. They generally choose twigs about half the thickness of a lead pencil, and each mass of eggs, nearly the color of the bark, is a muff surrounding the twig. It contains 100 or 200 elongate eggs arranged radially, the whole cemented together and covered by a varnishlike substance. The eggs remain without any obvious change until about the middle of the following April (the average date at Lincoln, Mass., is April 23), when all the eggs in a mass hatch almost simultaneously.

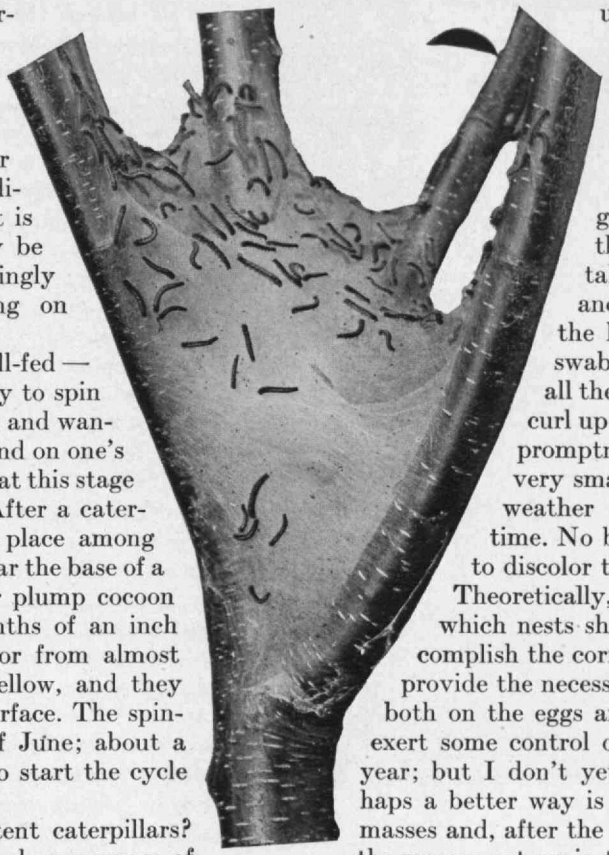
The time of hatching is determined apparently by the average temperature over a few preceding days. In any event, the time is so adjusted that the cherry leaves have just begun to unfold and generally have not exceeded three-fourths of an inch in length. Evidently, then, the young caterpillars find a tender source of correct food ready and waiting for them. It is rather interesting that a large number of observations on diverse insects agree that insects usually do not feed or grow at temperatures below 50 degrees Fahrenheit, and agreement is pretty general that the beginning of plant growth is at about 43 to 45 degrees. This fact suggests that the long association of insects with plants has led to a very neat adjustment which prevents insects from becoming active before the plants on which they would feed are also in growth.

To get back to our caterpillars, whom we left looking for their first meal — they proceed to crawl along the stem and feed on the new leaves. Each caterpillar, as it crawls, trails from its mouth a slender silken thread. Having fed, the caterpillars retreat along the path of silk which they have laid down (usually on the upper side of the branch), and they may go back beyond the egg mass to a fork, where they rest for some time, a few hours or even overnight. Then they follow their line of silk out to the feeding ground again.

After two or three days, during which they may have explored several branches, they begin to spin the tent. The floor of the tent seems to be constructed merely by the caterpillars crawling back and forth in the crotch and leaving their trails of silk everywhere they go. The roof of the tent seems to result from the combined work of all the caterpillars spinning overhead when they throw their heads upward. The roof contains one or more openings through which the caterpillars enter and leave the nest. They make two or three excursions a day to appropriate leaves for feeding. They do not feed at night. As they grow bigger, they obviously require a bigger nest, and according to my own observations they make use of an old roof as a new floor and proceed to spin additional roofs. All of this spinning seems to be done by caterpillars as individuals; but since they all have the same reaction, the effect is as though they had actually co-operated. Eventually the caterpillars are about an inch and a quarter in length,

fairly slender, and provided with long but not very abundant pale hairs. It is a matter of taste whether one shall regard them as handsome or as the reverse.

A large tent in a small cherry tree may result in complete defoliation; and because the flower buds of cherries are terminal structures from the centers of leaf buds, this severe attack wholly prevents flowering. When defoliation occurs, the caterpillars may have to seek other trees for their later meals. Under these conditions the little colony in the tent is broken up and its members may be found wandering about even singly over various plants and feeding on several trees other than cherries.



When the caterpillars are full-fed — after about six weeks — and ready to spin their cocoons, they leave the tents and wander very widely. They may be found on one's pet rose, but they will do no harm at this stage since they have ceased feeding. After a caterpillar has found an appropriate place among some leaves or even in the lawn near the base of a tree, it proceeds to spin a rather plump cocoon about an inch long and five-eighths of an inch wide. These cocoons vary in color from almost pure white to a rather bright yellow, and they have a characteristic crepelike surface. The spinning up occurs about the end of June; about a month later, the moths emerge to start the cycle all over again.

What should be done about tent caterpillars? Granted that they have the general appearance of an unmitigated nuisance, that their nests are often unsightly, and that they do a good deal of actual damage under some conditions, is their record entirely bad? No. In the first place, their feeding on large cherry trees is not entirely deleterious, for they are one of nature's ways of pruning and do diminish the number of flowers, thus making possible a reasonable set of fruit. Apparently none of our fruit trees can ripen as many fruits as it is able to produce flowers, so that some fruits have to be got rid of somewhere along the way.

Again, the unsightliness of the nests is not improved by the customary creosoting of them. Furthermore, the eastern tent caterpillars do not particularly attack cultivated cherries or apples if native wild cherries are available. As native insects, they favor the native trees, not the imported orchard stock. In addition they furnish at least a certain amount of food for several species of birds, notably the cuckoo and the Baltimore oriole.

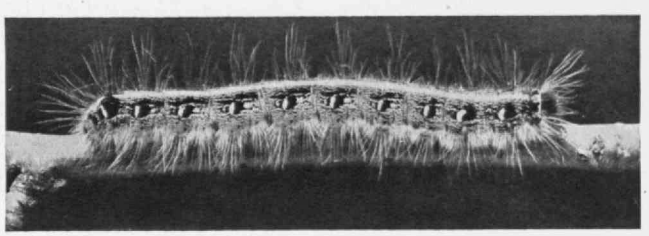
For several years I have tried the experiment of very complete control on my own place. The results have not been entirely beneficial. The number of nests has not noticeably declined over a five-year period. Of course, I do not control the tent caterpillars on my neighbors' places. A much more interesting result has been that, though my wild cherries have flowered abundantly, they have set practically no fruit, and what they have set has ripened very poorly. Further, the lack of natural pruning of the lower branches of the taller trees has resulted in excessive growth of the lower branches, which are ordinarily the ones that are most thoroughly pruned as a result of the caterpillar's ministrations.

My respects having been paid to the creosote method of control, which is ordinarily undertaken too late to save the flowers, it is only fair to divulge my own procedure. It is my habit to watch carefully for the first signs of tent construction. In so doing, I catch a good many colonies before they have even started. Then, taking a swab on a short stick and a small amount of one of the kerosene-base fly sprays, I swab each of the new nests and all the caterpillars I can see. They curl up and die with commendable promptness; the nests, which are very small, are disintegrated by the weather in a comparatively short time. No black, tarry residue remains to discolor the trees.

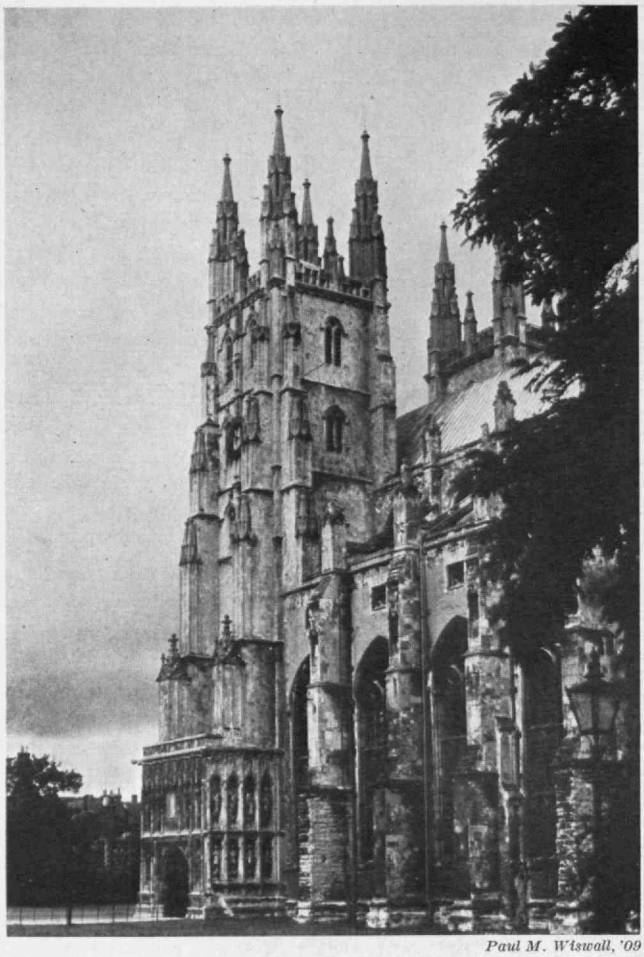
Theoretically, one should figure out just which nests should be left in order to accomplish the correct amount of pruning and provide the necessary parasites — which prey both on the eggs and on the caterpillars — to exert some control of the species from year to year; but I don't yet know how to do it. Perhaps a better way is to cut off some of the egg masses and, after the hatching of the worms, put the masses out again to release the parasites.

The Scientific "Emily Post"

A RECENT article in *Applied Anthropology*, a journal not long out of its first volume, relates with relish the sad tale of the British administrators who tried to reform the dietary habits of some natives on Bougainville, one of the Solomon Islands. At the moment, the natives are still unreformed and will undoubtedly remain so until the Japanese are driven from the island. The natives living in the mountains subsist almost entirely on taro, as the result of which they suffer from serious dietary deficiencies. Those living nearer the coast eat a wider variety of foods, including pork, but would still benefit from a broader menu. An official therefore visited the regions, harangued the population on the



The familiar tent of the eastern tent caterpillar is shown above on this page, and here is Malacosoma *right out straight. Photographs again from the Bureau of Entomology and Plant Quarantine.*



Paul M. Wiswall, '09

"But westward, look, the land is bright" — Canterbury Cathedral under lowery skies

evils of their too prevalent use of starchy foods, and left seeds and gardening instructions with the chiefs. Some, but not all, groups among the coastal natives planted the seeds. Among the mountaineers nothing whatever happened.

As the narrator comments, with an almost visible smile of satisfaction: "If the official had troubled to discover that women, not men, were the gardeners in the taro-eating north, he might have saved himself much trouble. His mistake was analogous to setting up a crocheting school for American business men. . . . He could also have discovered that political leadership is so rudimentary among the mountaineers that no self-styled chief carried prestige enough to put across a food innovation." Among the coastal people, the official would have been more successful had he appealed to the pride which the men of that region take in their skill in fine cooking, and had he chosen with more astuteness the leaders to whom he gave the seeds. Altogether, he lacked sufficient anthropological knowledge of the natives to succeed in his mission. But the moral has far wider implications.

The need for knowledge of man and his ways is so ancient and so acute that it could not wait for the establishment of a science whose object, stated with more hope than accuracy, is the study of man. When this science, anthropology, came into being little more than a century ago, it found such disciplines as history, economics, sociology, anatomy, physiology, and psychology, not to mention the humanities, enjoying squatters' rights on the territory it claimed for its own. Even an etiquette book is an unconscious treatise on cultural anthropology. And overlying all these formalized groupings of data on the antics of Homo sapiens is the painfully and individually acquired knowledge of one's fellows, used clumsily by most of us and with a skill amounting to genius by great statesmen and administrators. In a very real sense, anthropology was applied long before it or any other science existed.

Widespread recognition of the practical value of anthropology, however, is comparatively new. It arises not from the contributions which this science could make in the main theaters of our civilization, among the massed millions of Europe and the Americas, but from the aid which it gives a few countries in controlling native populations so far removed in thoughts and habits from their white administrators that the customary techniques of government are obviously inadequate. To avoid undue overlapping of previously instituted fields of study, the anthropologists have devoted the bulk of their attention to dead or primitive cultures. As public ethics developed to the point where the sufferings of primitive peoples enduring a perhaps inevitable "civilizing" process could no longer be ignored, government administrators began to realize that the esoteric data being gathered by the anthropologist about the political and social organizations, food habits, economic systems, laws, and religions of their charges might be used to make the work of administration easier and to reduce the social disintegration and depopulation which were frequently the initial signs that Western culture had finally arrived. The first person to appoint an official anthropologist is reported to have been the governor of the British Gold Coast in Africa. The Netherlands Government, because of the wide colonial possessions it held and will presumably hold again, and the United States Government, because of its Indian and Eskimauan charges, are also making considerable use of anthropologists or of administrators with anthropological training. Missionaries, teachers, policemen, jurists, and employers of native labor are others who can profit from a formal study of the people with whom they must deal.

The global aspects of this war, and its tendency to choose battlefields in the wildest and most far-off corners of the world, have emphasized the applied value of anthropology. (Incidentally, even Kipling might have boggled at the goings on in New Guinea and the Solomons — bombs instead of blowguns on Bougainville, air fleets over the Bismarck Sea.) A report by Elsie V. Steedman, assistant professor of sociology and anthropology at Hunter College, lists 36 government agencies and other services "secret in nature" which can profitably use persons with a training in anthropology. Anthropologists have prepared handbooks explaining the customs of, and the methods of dealing with, the various peoples our military forces encounter. They have also furnished valuable information on economic matters, for the conventional economist studies only the very special forms of economics typical of western Europe and America. (*Continued on page 338*)

Research and Patents

Lack of Clear Understanding of the Patent Monopoly Is the Greatest Danger to the American System

By Robert E. Wilson

PART I

CRITICS of our patent system generally say that they recognize the necessity of giving some reward to the inventor, although they are vague as to the form which that reward should take and they usually object to giving him even a limited monopoly on what he discovers. The alternative — which would be to try to determine the fair cash value of an invention — is, however, about the most impossible task a government could undertake; it involves, first, appraising the degree of novelty and value of the inventor's contribution before one knows what other inventors may have been doing in the same field and, second, appraising industrial trends many years in advance and deciding whether and how soon some other and better invention will supersede the one in question. Such a task would give pause to a combination of judge, seer, and prophet — and such a man would be too wise to undertake the job.

Whoever first conceived the notion of granting an inventor a limited monopoly in return for public disclosure of his invention had a brilliant idea, because it takes advantage of the fact that every inventor tends to overvalue his own invention, and that no reasonable cash sum would encourage him so much as the thought of being able to control his own invention for 17 years. Furthermore, because the magnitude of the reward is largely dependent on how important the invention turns out to be and on the inventor's intelligence in handling his patent, it is difficult to think of a fairer method. If he tries to charge too much, his invention will be little used and competitive research will be stimulated. In any event the public, at very small average cost, gets three advantages: prompt knowledge of the invention to add to the scientific background on which further research can be based, reasonable assurance that the worth-while inventions will be commercialized, and free use of the invention after the patent expires.

In my opinion the greatest danger to our patent system lies in the lack of clear understanding of both the nature of the patent monopoly and the compelling reasons for granting one to the discoverer of a really new product or process. Some of the misunderstanding arises naturally out of the complexity of the situation, but much is due to a studied misrepresentation of the essential facts by a small group who have apparently undertaken to destroy or nullify our patent system. One of their outstanding methods of confusing the public has been the old-fashioned one of name calling. Thus the right to the exclusive use of one's own invention for a limited period, as provided in our Constitution and enacted into law on the recommendation of that great antimonopolist, Thomas Jefferson, is supposed to be damned by being called a "monopoly." The public traditionally dislikes a monopoly, regarding it as something carved out of the public domain and acquired by an individual. A patent right, however, covers something discovered or created by the individual and is a natural monopoly as long as he can keep it secret. The patent law simply offers him a legally protected monopoly, limited in time, in return for prompt disclosure, so that the information is immediately, and all rights are eventually, *added to* the public domain.

A mere exchange of free cross-licenses and technical information among a group of companies engaged in research in a given field is condemned as a "patent pool" or a "monopoly of monopolies." Even the magazine *Fortune*, evidently under the spell of recent Washington releases, went so far as to picture a patent pool as a jail with laboratory research workers as the prisoners in striped suits and with armed guards shooting escaping prisoners.

If an American company, in order to get the right to manufacture under an important patent granted by our government to a foreign owner, had to agree to confine its operations under the patent to the United States, it is charged with participating in a cartel; and if war develops 10 years later, the company is publicly accused of having conspired with our present enemy to deprive our present allies of needed products. A small inventor was accused before the Senate patents committee of blocking the manufacture of an item essential in airplane equipment by refusing to grant licenses, whereas it shortly developed that the device was not essential but merely one of several alternatives, and that the only reason he had not been able to supply his entire demand was the refusal of government officials to permit him to buy the necessary equipment to enlarge his plant.

I do not mean to say that patents cannot be, or have not been, abused, as rights of every kind can be misused. I do believe, however, that a deliberate attempt has been made to discredit our patent system in much of the publicity which has emanated from Washington during the past year or two.

As another example of unfair attacks on patents and inventions, consider the public remarks, before this same Senate committee, which Thurman Arnold made regarding tetraethyl lead. Everyone appreciates the tremendous economic value of this invention and knows the story of the long and brilliant series of researches by Thomas Midgley, Jr., which culminated in the discovery of this antiknock agent that increased by an

amount equal to 75 Boulder dams the total available horsepower of the automobile engines made in 1941. It was also one of two inventions that made possible the 100-octane gasoline which has contributed so much to the air superiority of the United Nations. The discovery was the primary basis for the award of the Perkin Medal to Dr. Midgley in 1937. Mr. Arnold airily dismissed it all with the wisecrack: "Now whether these [ethyl] patents were good, I do not know. It struck me at the time, what else could you do with tetraethyl lead but put it in gasoline? You can't put it in coffee."

Such statements by government officials in key positions are particularly dangerous in complex scientific matters which the lay public cannot appraise. The statement would have been much less dangerous, though no less unsound, if it had been: "Now whether these telephone patents were good, I do not know. It struck me at the time — what else could you do with a telephone but talk over it? You can't play tennis with it."

I hope these examples are adequate evidence that scientists must do their part to educate the public and the lawmakers regarding the essential facts about our patent system. As the first step in this educational process we must escape from what Justice Cardozo has called "the tyranny of words" and try to get at fundamental meanings.

Our patent system was not created to enrich inventors but to benefit the public by encouraging the invention and the development of new and useful processes or products. To secure these benefits, Congress, on behalf of the public, has solemnly offered a monopoly, limited in time, to anyone who will make prompt and full disclosure of a new and useful invention, instead of keeping it secret. If he does not make such full disclosure, the patent is *ipso facto* void. A patent represents an addition to, and not a subtraction from, the public wealth. Under our present laws and decisions a patent cannot be used to fix resale prices, to control unpatented articles used in connection with the invention, or otherwise to extend the monopoly beyond its limited purview. Judicial decisions are steadily narrowing the field of what it is permissible to do under a patent. Nevertheless, a patent is a monopoly, is supposed to be a monopoly, and should not be considered damned by being called a monopoly.

As a matter of fact, a monopoly is not the inherent evil many would have us believe. One of the greatest factors in the early development of America was that our settlers could acquire the ownership of land in fee simple and thus monopolize forever their land, its products, its minerals, and the improvements which they made thereon. No greater incentive to hard work and self-sacrifice has ever been found than this right of a man to own and control the fruits of his labors. No one today questions the social value and fairness of that monopoly incentive, which did so much to extend our geographical frontiers and bring new lands under cultivation. The monopoly granted to the discoverer of a mining claim was likewise largely responsible for the rapid development of our mineral resources. Is it not equally important and valuable to extend our only remaining frontiers — those of science and invention — when to do so we need only offer a monopoly for a short span of years?

Probably the first clear perception of the need for, and justice of, a patent monopoly was in the Statute of Monopolies which the English Parliament forced through in 1623, during the reign of James I, to stop the Crown from granting to court favorites monopolies on everyday commodities of life, such as salt, spices, and playing cards. This statute prohibited all monopolies except those for new inventions and new importations into the realm, and it was the first express recognition of the fact that a man should be entitled to some form of property right in, and protection of, his new ideas and developments. The patent laws of the entire world have sprung from this statute, and the gradual recognition of the great incentive thus created has had much to do with the scientific and industrial progress of the past two centuries.

The experience of this country during the last 150 years has certainly demonstrated that the American patent system has been an outstanding success. It was based on a sound understanding of human nature, and its principles have no more been outmoded than has human nature been outmoded. It has stimulated and supported the natural inventive genius of our people, and has resulted in technical and industrial developments which have made us the envy of all other nations.

Though it might be argued that other nations also have patent systems without getting such outstanding results, the fact is that the American patent system has very real advantages over most of the foreign systems in several respects: For example, it provides that the first inventor, and not the first one who files his application in the Patent Office, is entitled to the patent. This provision encourages a man to take adequate time to appraise his invention, work out the details, and even discuss it with others, without jeopardizing his position as the first inventor, provided that he keeps adequate records. American patents, moreover, are not subjected to heavy taxes or compulsory licensing provisions, which would greatly decrease the practical value of the patent, especially to an ordinary independent inventor, whose financial resources are likely to be inadequate during the early years. Furthermore, the fact that sound patents are generally respected by the responsible business interests of this country increases the market for, and the value of, a patent, in contradistinction to the practices in many foreign countries. As John W. Anderson, an independent inventor of note, has well said: "People seldom plant gardens where thieves abound and police protection is inadequate. Pirates are everywhere and inventors will not continue to invent, nor will small investors support their inventions, if patent rights are not sympathetically protected."

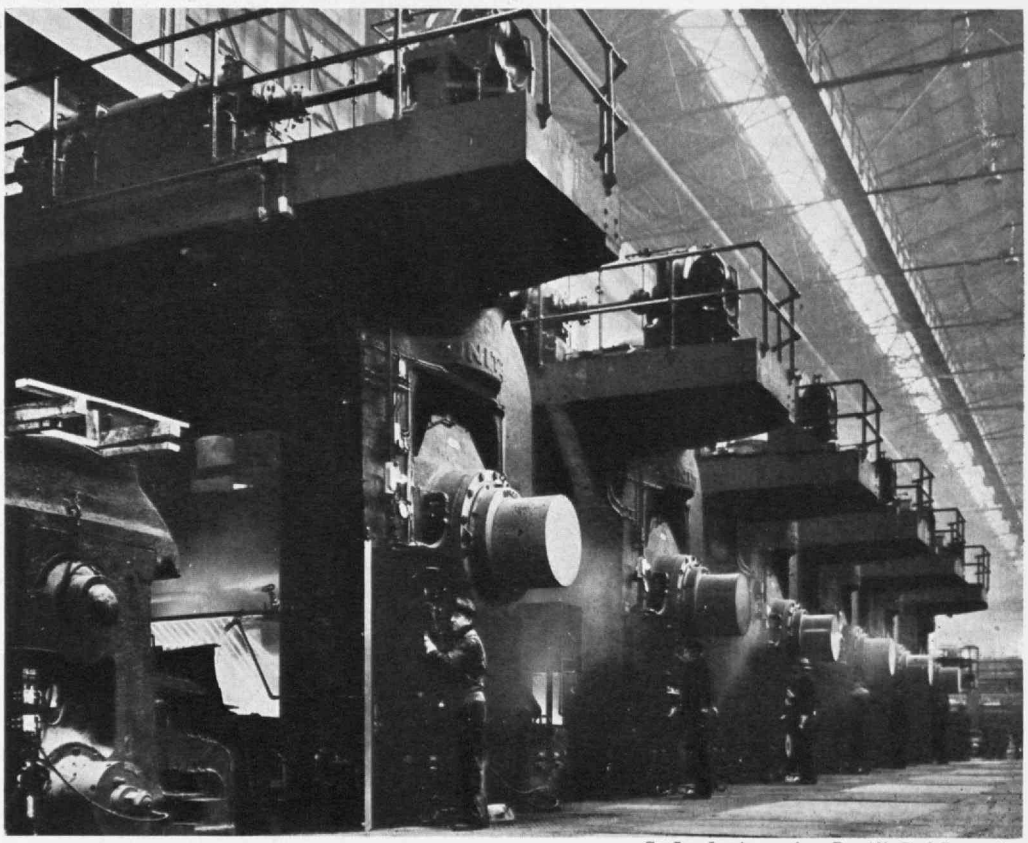
Another object of misinformed criticism is the simple cross-licensing agreement among parties actively engaged in similar lines of research. Because such research generally results in many Patent Office interferences and overlapping patents which would prevent any party from using the best process in sight, there has been an increasing tendency to avoid the expense and delay attendant upon interference and infringement litigation by arbitration of the interferences and exchange of cross licenses covering both past and future developments in a given field, usually on a royalty-free basis.

Such an agreement generally involves provisions for the licensing of others upon reasonable terms and a division of royalties based upon the best estimate of the parties as to the relative value of their respective positions. Usually each party also agrees to conduct further research in the field in question and is left free to license his own patents on such terms as he sees fit.

Despite recent attempts to arouse opposition to such arrangements, all of them being labeled as "patent pools" without any analysis of their provisions, the ordinary cross-licensing arrangement among companies actively engaged in research seems clearly to be very much in the public interest since it facilitates and stimulates research, prevents unnecessary duplication, removes obstacles to prompt commercial development, and avoids wasteful litigation. The free and prompt exchange of ideas and information among rival laboratories is a tremendous accelerator of new developments. Cross-licensing arrangements also make available to an outside licensee all the necessary patents and, what is frequently more important, the combined experience of several companies. Hence he can select and operate the process best suited to his needs without having to acquire licenses and information from several different sources. The only one that could reasonably complain against such an arrangement is the individual or company that hopes to use the new process with impunity while the owners of the patents fritter away the life of their patents in lengthy and often suicidal litigation with one another.

Since cross-licensing agreements of this type tend to promote not only research and invention but the prompt commercial application of the inventions, the question might be raised why free cross-licensing agreements covering entire industries would not be still better. The main difficulty of such arrangements is that they run up against human nature: When some individuals or companies realize that a competitor will have the same rights they have to anything new which they may develop, they frequently decide to leave most of the expense of research and development to the other fellow and hope for a free ride for themselves. Other companies which as a matter of principle continue their research, sooner or later become irritated when the fruits of it are appropriated by those who have contributed nothing. Industry-wide pools also remove the main incentive of any company to pioneer radical new developments, inasmuch as they will quickly be copied by everyone if they prove popular.

While it is true that cross-licensing agreements have occasionally been used as screens for attempts to divide a market or to control unpatented devices, such arrangements are clearly under the prohibition of the antitrust laws and are practically obsolete today, thanks in part to the vigorous activity of the antitrust division. Accordingly there seems to be no reason to legislate against the ordinary and desirable type of cross-licensing agreement which I have described. If a few of the larger companies in a major industry made a cross-licensing arrangement which covered every branch of their business without regard to their respective patent and research positions and which excluded others, the arrangement might be open to criticism; but where, as in the petroleum industry, each new important field of development generally becomes the basis for one or more cross-licensing arrangements with different participants, depending upon who has pioneered in the new field, and where the arrangement (*Continued on page 320*)



A train of hot-mill finishing-stands in a continuous strip steel mill — representative of American industry built on research as fostered by the patent system

Geoffrey Landesman from Republic Steel Corporation

Along the Aleutian Route

Long Mastered by the Japanese, the White Ainus of the Northern Island of Hokkaido Cling to Ancient Customs

By Neill James

WHEN the fortunes of war focused our attention on the chain of islands which links Japan and America, a curious race of white orientals living on Hokkaido, largest island on the direct air route between Tokyo and Fairbanks, came into the limelight. This once powerful, warlike race of white aborigines, the Ainus, were in possession of the island archipelago of what is now Japan before the coming of the yellow man. The earliest writings of the Japanese are replete with accounts of the battles with the Ainus, who fought them fiercely for six centuries, at first with the bow and arrow and later with the sword. Finally, about A.D. 900, weakened by civil war, the Ainus were conquered and pushed north until their last retreat was Hokkaido, northern outpost of Japan. The Ainus are anything but a docile people, but, being only 16,000 strong, they aren't important in the general scheme of empire any more. Today they dwell in peace along the southern shore and up the narrow river valleys, sharing this fertile pioneer island with nearly three million Nipponese settlers.

The once remote but strategically situated Hokkaido, now becoming a hot spot of the Orient, is a sparsely settled and not very well fortified island about the size of Ireland. It contains much potential wealth. In addition to supplying all the horses for the cavalry, 95 per cent of the butter and cheese used in Japan, and quantities of wheat, steel, paper, and lumber, Hokkaido contains vast fields of coal estimated at 140,000,000,000 tons. The terrain is Occidental rather than Oriental in character, with high mountains, active volcanoes, broad sweeping plains cut by rushing rivers, and large tracts of virgin forest land through which some 6,000 wild bears roam.

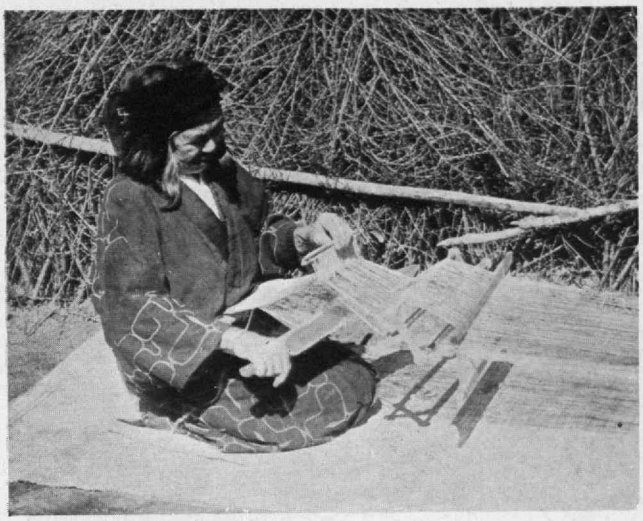
The smooth-skinned Japanese of small stature has a tradition of fear for the fierce, stocky, hairy Ainu. Even after a thousand years of subjugation, no Ainu today is permitted to possess a complete sword. A cherished heirloom kept as an ornament (of which there are many) must be rendered useless as a weapon by having the blade detached from the handle.

Anthropologists have long puzzled over the enigma of the Ainus, unable to determine whence they came or how white men happened to be inhabiting islands in the Orient some 3,000 years ago. Some believe they migrated from northern Europe across Siberia; others think they came from southern Europe by way of the South Sea Islands. Most agree the Ainus are Caucasian. Despite ten centuries of suppression, the remnants of this remarkable race have doggedly clung to their distinctive culture, mode of dress, native language, and strange religion. The women wear blue mustaches tattooed on their faces as a mark of beauty, while the deeply religious, dignified, robe-clad bearded men, of sturdy physique and unusually large heads, might have stepped straight from the pages of the Bible.

In the 1870's, Japan, fearing Russian encroachment and aided by foreign experts including many American agriculturists, made a definite effort to colonize Hok-



An Ainu family at home, seated around the abeoi, *to the left above which is suspended the* suwate, *curious adjustable pothook. These white worshipers of the bear live and dress much as they did before they were driven north and finally conquered by the Japanese a thousand years ago.*



The hand loom of the Ainus is used to weave cloth made from the inner bark of the elm.

kaido. Since that time, the Ainus have lived in close contact with the Japanese settlers, yet neither race has been influenced to any degree by the other. In the matter of everyday dress, the Ainus have borrowed the cotton material of the Japanese, but the style of their garments remains as always, and on ceremonial occasions they continue to wear the *attush*, an Ainu robe made of material woven on hand looms from the inner bark of the elm and decorated with characteristic appliquéd geometric designs in a style worn a thousand years ago.

Despite the efforts of Christian and Buddhist missionaries and the recent banning of the bear festival, his only public religious manifestation, the Ainu clings doggedly to his own religion — the worship of the bear and numerous other gods. There are neither temples nor shrines in Ainu communities. Every man's home is his temple, containing a god shelf and a sacred east window, and on his hearth the goddess of fire is worshiped daily. The goddess of fire receives especial attention because, living in the reddest part of the fire on the hearth, she knows the intimate life of the family and will appear as a witness at the judgment day, a private hearing held directly after death. From her testimony there is no appeal.

The Ainus, like the Chinese, are a conservative race. In the early days no man dared even so much as to vary the shape of the roof of his modest grass home without consulting his neighbors. Today, Ainu houses are of a common design, varying in size only. Having learned the art of building before the advent of metals, the Ainus have found no reason for changing, and nails have no place in the construction of their houses. A true Ainu roof is constructed with a triangle of poles lashed together with fibers and placed at each end of a ridgepole without center supports. This form of roof, minus supports, is held by modern anthropologists to be proof that the Ainu house once consisted of a roof only, or perhaps a roof over a hole in the earth. They believe that the roof was at a later period raised and placed atop grass walls. This hypothesis would account for the mysterious pits found throughout Hokkaido, which have given rise to the theory that the early aborigines were pit dwellers.

The construction of the Ainu house is a simple process. The framework of the roof is first lashed together, then lifted atop posts and thatched in bristly layers with *kaya*, a native pampas grass. An opening is left in each gable as a smoke exit. The same *kaya* grass is rolled into thick bundles a dozen inches in diameter and six or seven feet long. These are placed on end and woven together to form the walls. Woven reeds cover the floor, which is usually dirt. Many modern houses are partly floored with planks. The usual design is one large room which is used as a place for living, sleeping, cooking, and worship, and a small anteroom which serves as an entrance way and as a storage place for water jars and the cooking pot. The more affluent the family, the larger the main room. A chief's house which I occupied in Siraoi was perhaps 50 by 40 feet. The main room was completely floored, while the anteroom had the usual hard dirt floor. Even in the double-crossing Twentieth Century, the Ainus, an essentially honest folk, have found no use for locks and keys. A thatched storehouse on stilts, a bear pen, also on stilts, and a sacred hedge composed of poles planted in the earth before the east window and adorned with fetishes and bear skulls, complete a typical Ainu establishment, which is usually set in the middle of an acre plot of vegetable garden. In a climate of Siberian intensity, the universal heating system is a simple box, two by three feet, filled with ashes and imbedded in the floor, in which a wood fire blazes. This hearth, called *abeoi*, is used for cooking and makes little pretense of supplying heat to warm the spacious and lofty room. Although smoke is supposed to exit via smoke holes in the gables, smoke-filled houses have undoubtedly contributed to the poor eyesight of the Ainus. Above the *abeoi* hangs the *suwate*, a cleverly devised adjustable wooden pothook, crudely decorated with carvings. Japanese, although using the *abeoi* style of hearth, do not customarily make use of a pothook. On Hokkaido, I noted with interest that the adjustable pothook was the one custom which the settlers had borrowed from the Ainus.

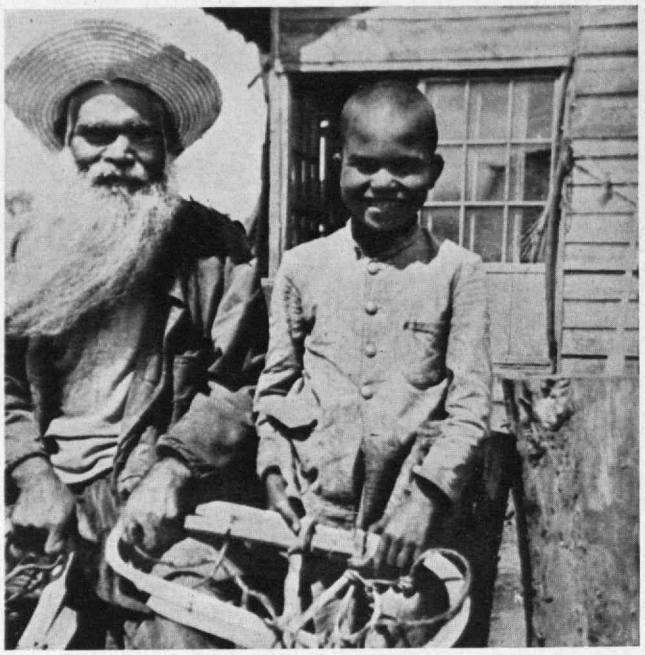
In early days a separate house was built for an aged person. At his death this was immediately burned to prevent evil spirits from finding their way back among



Ainu women at work before a grass house pound millet into flour. The geometrical figures on their costumes are characteristic.



Tekate, an Ainu centenarian, continues her weaving though she is totally blind.



An Ainu boy makes his own snowshoes on Hokkaido, where they are a winter necessity.

the living. I encountered many old women living alone awaiting a visit from the angel of death. When a member of a family succumbs, and destroying the dwelling is economically impracticable, the possible return of evil spirits is thwarted by having the corpse removed through a hole torn in the grass wall. This is repaired while burial is taking place. Thus are evil spirits confused and unable to find their way into the home. When leaving the cemetery, the mourners, including the women with their faces covered with white veils, walk backward until they come to a bend in the road, so that evil spirits may not cling to their backs. The grave marker, a post shaped like a halberd, is set up at the time of burial, not so much in memory of the dead as a warning to the living to avoid the place.

The Ainu has a lot of "savvy" and has survived because he is quick to adapt his environment to his needs. Living in a land devoid of clay suitable for pottery, he devised containers by cleverly folding wide strips of bark. Since these are not fireproof, he managed boiling by dropping heated rocks into water in the pots. From local hardwood he carved platters, bowls, and wooden spoons necessary for daily use.

The reindeerskin parka and moccasins of an old-time Ainu are of the same design as those worn by the present-day Laplander. When deerskin became scarce, the Ainu fashioned his moccasins from salmonskin, using coarse grass to stuff them, a custom in vogue in Lapland today. The Ainu, like the Hawaiian, utilized the feathers of birds in making garments. The aborigine in the Arctic fashioned his shirt for warmth, using the skins of birds with the feathers left on, while the South Sea Islander used the feathers to make a gorgeous cape for ceremonial occasions.

The design of the small wooden hand loom used in weaving has not changed since it was invented, and a characteristic sight in any Ainu community today is that of a tattooed woman, seated on a mat in the sunshine in the yard with the loom fastened about her waist and the opposite end of the woof attached to a corner of the house some seven yards distant, weaving garments for her family from the prepared bark of the elm tree. Four days are required to weave sufficient material for an *attush*, but two such garments, when supplemented with alien cotton material for everyday wear, will last a man a lifetime. Mats are woven on the crudest of looms, composed of two forked sticks stuck in the earth with a cross pole between them. A couple of dozen peanut-shaped smooth stones tied to the woof are tossed back and forth over strips of bark placed along the cross pole during the weaving, a job frequently performed by elderly blind women. Despite their crudeness, such sticks are priceless to the Ainu and are preserved from generation to generation. I saw one such loom which had been in the family for more than 100 years.

A forked stick also serves as a bobbin on which bands woven from linden bark are wound. These will be used as lacings for burial mats, or attached to a woven headband for carrying the baby. I interrupted Tekate, a totally blind 100-year-old Ainu woman, seated on a mat near the firebox in her home busily twisting bark into useful rope and winding the finished product on a forked stick. She consented to be photographed, but first she had to dress for the picture. She hobbled to a dark corner, found her death chest, and brought it to the door. Within the chest I saw a tin hot-water bottle, burial lacings, beads, and trinkets. I gasped at the bright colors in her *attush*. Dressed in her best, Tekate did not appear so mummified as one might expect. Her hands, wrists, and forearms were tattooed in an elaborate pattern, and the mustache around her mouth showed a strong blue after 90 years of wear. Her shoulder-length shock of hair, bound with a black bandeau, was far from gray.

The Ainus possess the secret of making an extremely potent poison. It is concocted by a few elders of the village, and the manufacture of (*Continued on page 324*)

The Economics of Innovation

Two Stages Are Involved in Adjustment of the National Economy to New Products

By Ralph E. Freeman

FROM behind the closed doors of research laboratories we hear whispers of discoveries which, when applied to peacetime uses, will radically change our way of living. But one does not have to put one's ear to the door of the laboratory to become aware of this fact. The press and the radio are predicting revolutionary technical developments based on the new materials, techniques, and sources of power that wartime scientific research will bequeath to a postwar world.

At a convention of the American Chemical Society, Charles M. A. Stine gave impressive testimony as to the promise of further progress: Already, under the pressure of war, "our world of 1940 . . . has become an antiquity," he said. "The inconceivables of two years ago are to-day's realities. . . . The pressures of this war are compressing into the space of months developments that might have taken us a half century to realize if necessity had not forced the pace." In the course of his address, Dr. Stine had something to say about economic problems. These developments, he predicted, will raise the level of living to new heights. He made a plea for freedom of economic enterprise as a means of encouraging producers to take risks and to exercise initiative in the application of scientific discoveries to human use.

The fate of the system of private enterprise rests largely upon its ability to function without periodical breakdowns that entail staggering loss of output and widespread unemployment. Though experience demonstrates the long-run economic blessings of scientific advance, it also suggests that the short-run influences may not be entirely beneficent. Indeed it is conceivable that the compression of a century of technological progress into a few months or years will have a disconcerting effect upon our industrial life. The attempt to develop and apply such a gigantic accumulation of innovations might be so far beyond the adaptive capacity of the economic system as to generate a great inflationary boom with a following deflationary collapse.

The economic process of innovation may be divided into two phases: The first is the tooling-up period, during which the new industries provide themselves with plant and equipment. The second is devoted largely to utilization of the productive instruments to turn out finished goods for consumers. There is a limit to the capacity which any industry can profitably utilize at any one time. As this limit is approached, new construction tapers off and the provision of consumers' goods becomes the dominant activity. If only a single industry is involved, the shift from the first to the second phase may proceed with little disturbance. If many industries are affected simultaneously, however, the shift may be fraught with the possibility of serious maladjustment, and the first period is likely to be one of upswing to prosperity, with the second a downswing to depression.

UNDOUBTEDLY much plant and equipment will be ready for the innovators as soon as the war is over. According to Dr. Stine, "The nation will emerge from this war with capacities for making plastics, synthetic fibers, nitrates, hydrocarbons, high octane gasolines and literally scores of chemicals and other raw materials on a scale that only two years ago was beyond our comprehension." Moreover, many factories now making planes, tanks, guns, ammunition, and other implements of war are convertible to civilian production without large expenditures for capital goods. In fact, we may anticipate finding ourselves with ample, perhaps an excess, capacity to produce some kinds of equipment, such as machine tools. In so far as the necessary means of production are already in existence, the economic stimulus of postwar technological development will be reduced.

But if the scientific discoveries are as numerous and important as has been forecast, our requirements for investment goods will far exceed the amount which will be available to us as the result of wartime expansion. The new materials must be converted into new commodities — a process which will call for billions of dollars of new equipment. In design, structure, and location, many existing factory buildings will be unsuited to the production requirements of the future. If the automobile industry's slate has been swept clear for a fresh start and if housing is to be revolutionized by new structural and insulating materials as well as by new methods of lighting and air conditioning, more producers' goods will be required. If "the newest and most versatile of plastics will be available after this war on a scale beyond all previous conceptions," a vast amount of new equipment will be needed to fabricate them into finished goods. And the economic effect of war research is sure to be felt in established industries. As old materials and techniques become obsolete, the demands for new capital goods in existing industries will increase. The railroads, for example, are said to be planning a large-scale utilization of recent technical improvements. Thus the wave of scientific progress may carry the whole industrial system into a greatly enlarged volume of investment expenditure.

The basis for an inflationary boom may be described in terms of the fundamental economic tendency for the money value of goods produced and offered for sale to move into equality with the money income being offered to buy these goods. When the former is in excess

of the latter, competition among sellers forces down the prices of the goods, thus reducing their total money value. When the income offered for goods is in excess of the money value of the goods, competition among buyers raises prices, thus increasing the value of goods. Though this process may be described as a movement toward equality, or equilibrium, its outcome may be good or bad depending on how the economic system is managed.

Consider the condition of the system at the present moment. The money income being paid out by manufacturers engaged in war production is becoming larger, while the physical volume of goods available for purchase by civilians is becoming smaller. Under these conditions, prices have a strong tendency to rise, thus bringing the value of civilian production into equality with the growing volume of monetary purchasing power. These equilibrating forces exert an inflationary pressure. The remedy, of course, is to establish equilibrium by some means other than that of price advances. Since restoration of the equilibrium by an increase in the amount of civilian goods is out of the question, the only alternative is to curtail the money income flowing into the market. As we all know, gigantic efforts are now being made to accomplish this result through higher taxes and larger civilian purchasing of government bonds.

The exploitation of technological innovations after the war will present a similar problem. The money to finance investment goods will have to come from savings, supplemented if necessary by bank credit. "Savings" may be defined as disposable income minus consumption expenditure; "investment" may be defined as the actual expenditures on investment (durable) goods.* Whether the volume of savings will be sufficient depends chiefly upon the magnitude of the new investment opportunities that will be opened up. If investment undergoes a substantial increase, there is no reason to suppose that savings will keep step. The two processes are different, are conducted largely by different groups of people, and are subject to different motivation. Our war experience gives evidence of this fact. In spite of gigantic efforts to induce people to curtail consumption and save more, the volume of war production now outruns by astronomical amounts the sales of government bonds to the public.

Probably, therefore, investment will tend from time to time to exceed savings, thus creating gaps to be filled by expansion of credit by the banks. As inequalities appear between spendable income and goods for sale, inflationary pressures will be generated. Prices will be driven upward, not because of government spending financed by the sale of bonds to the banks, as at present, but because of private investment financed by the expansion of bank lending to business enterprises.

To enlarge upon the economic consequences of inflation is perhaps unnecessary. Rising prices increase the expectation of profit. Modern business is conducted through the purchase and sale of goods and services. Since purchases usually precede sales, upward price swings permit the businessman to buy cheap and sell dear, and since wages, interest rates, and the prices of other cost elements generally rise more slowly than the prices of goods produced, the result is a widening profit margin. Profit is the actuating force in business. When there is expectation of increased profit, production schedules are enlarged, employment expands, and the national income increases.

THERE is, of course, a vast difference between the production of instruments for war and the production of an industrial apparatus which will in due time be capable of furnishing new commodities and services for consumers. When that time comes after the war, the economic system will enter the second stage of the process of innovation. As additional finished goods appear, absorbing more and more of the purchasing power of the community, the rate of production of plant and equipment will diminish. A shift from the making of instruments of production to the making of finished goods will occur. As already suggested, at some stage in the development of an industry a transition from adolescence to maturity takes place, and a redistribution of productive agencies results. If this transition occurs at different times in different industries, the task of readjustment will be less disturbing than if it occurs simultaneously in many industries.

One might suppose that the economic system would adapt itself to this shift of production, that some of the capital and labor formerly engaged in producing investment goods would be taken over by enterprises producing the new consumers' goods. In this way a collapse in one of the segments of the economy would be counterbalanced by expansion in another without any net diminution in employment and income. Unfortunately, however, a perfect mobility of resources does not exist. The transfer of capital which is embodied in buildings, machinery, and other fixed forms can take place only as the fixed capital wears out. Impeding the movement of workers are many obstacles, such as lack of training, transportation difficulties, and ignorance of the labor market. Meanwhile idleness of plant and unemployment of labor cut down the amount of money income paid out in the capital goods industries, and the resultant curtailment of purchasing power will have serious repercussions throughout the whole economy.

Yet even if the adaptive capacity of the system is able to take care of the readjustments involved in these changes, trouble is likely to arise in this phase because of a deficiency in money income. Here the question of savings crops up again. The amount saved, as already explained, does not vary with changes in the need for savings. Savings are used to buy production equipment and other durable goods. What is likely to happen when expenditures for these goods decline? Two changes will probably occur: First, the additional bank credit that was injected into the system to finance the expansion of durable goods will gradually be withdrawn and, second, some of the community's savings will from time to time be uninvested, or hoarded.

The first of these results will tend to bring to a stop the price rise that had been fostered by the additional credit which the banks had been creating. Less money will be available to spend. In (*Continued on page 330*)

*These definitions are essentially those adopted by D. H. Robertson, whose "period analysis" may be regarded as the basis of the above discussion.

Four on War

From the Writings of Earlier Scientists Is Culled Proof of Their Efforts for Life Rather Than Destruction

By M. F. Ashley Montagu

THE war in which we are now engaged is beyond all others one in which science and technology will play a decisive role. Scientists in the so-called pure and applied sciences are today, as never before, doing their utmost to create and improve the mechanical devices and other processes which will serve to bring about the utter rout and defeat of our enemies. The sooner this is done, the better. This is the sentiment which scientists, possibly more than any other group of men, feel deeply. They will increase the expenditure of their energies to the limit the sooner to bring this conflict to a victorious conclusion. Scientists are interested in life, in the continuing and increasing good of the greatest number; they are distinctly *not* interested in death or in the use of their creative powers to destroy. So have they always felt, but when their homelands have been threatened by foreign tyrants, they have always been among the first to come to their countries' defense.

As illustrative of the long tradition of this social consciousness in peace and war, several little-known statements, which are in themselves of the greatest interest, from the writings of four great scientists will be cited here. Of these scientists, the first, Leonardo da Vinci of Florence (1452–1519) was a great artist, anatomist, and engineer; the second, Nicolò Tartaglia of Brescia (circa 1506–1559), was a great mathematician and the founder of the science of ballistics; the third, Father Francesco Lana (1631–1687), was the inventor of the first airship; and the fourth was our own Benjamin Franklin (1706–1790).

Leonardo, who had been military engineer in the Romagna under Cesare Borgia, stigmatized war as "the most bestial madness," but he added this significant qualifying remark: "When besieged by ambitious tyrants I find a means of offence and defence in order to preserve the chief gift of nature, which is liberty. . . ."[1] Though written more than 400 years ago, these words may still serve scientists as an inspiration and motto. Among the instruments of offense and defense in war designed by Leonardo, drawings or descriptions of which have been preserved, are the three great weapons of modern warfare — the bombing airplane, the tank, and the submarine. In the account of the latter, written during peacetime about the year 1500, Leonardo expresses himself on the caution with which it is necessary to describe inventions that may be put to barbaric uses by unscrupulous men. This passage is to be found in his notes on "The Nature of Water" and reads as follows:

"How by an appliance many are able to remain for some time under water. How and why I do not describe my method of remaining under water for as long a time as I can remain without food; and this I do not publish or divulge on account of the evil nature of men who would practice assassinations at the bottom of the seas by breaking the ships in their lowest parts and sinking them together with the crews who are in them; and although I will furnish particulars of others they are such as are not dangerous, for above the surface of the water emerges the mouth of the tube by which they draw in breath, supported upon wine-skins or pieces of cork."[2]

It was for good, not for evil, purposes that Leonardo wished his inventions to be used, but when the people with whom he had identified himself were besieged by ambitious tyrants, he freely offered his inventions in order to preserve the chief gift of nature, which is liberty. In similar case was Nicolò Tartaglia. In the "Epistola"

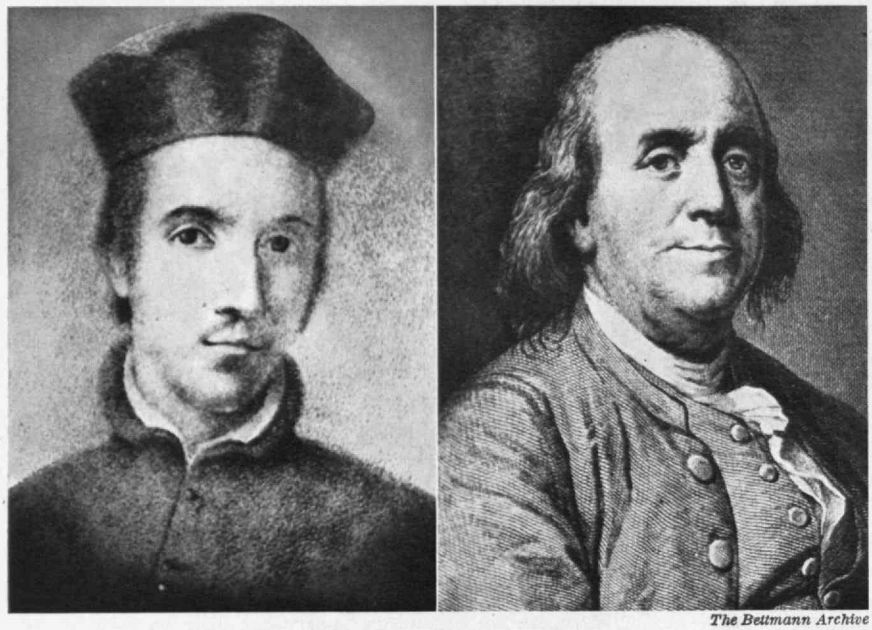
[1] Edward McCurdy, *The Notebooks of Leonardo da Vinci*, II: 210.

[2] *Ibid.*, p. 109



Left: *Leonardo da Vinci, an engraving by Morghem from a self-portrait;* right: *Nicolò Tartaglia*

The Bettmann Archive



The Bettmann Archive

Left: *Father Francesco Lana, from a drawing preserved in the College of the Societas Jesu in Brescia;* right: *Benjamin Franklin, a steel engraving after the portrait by Duplessis*

to his *Della nova scienza*, written at Venice on the 20th December, 1537 (Old Style), and addressed to His Excellency the Duke of Urbino, Tartaglia writes: "When I was living in the town of Verona, Illustrious Duke, one of my intimates, my cordial friend, the master of ordnance at the old castle, a man of experience and great skill in his art and endowed with an abundance of good qualities, asked me one day my opinion how to aim a piece of artillery to give it the greatest range. Although I had no practical knowledge whatever of artillery, for in truth, Excellent Duke, I have never in my life shot a single round with firearms, arquebus, bombard, or musket, nevertheless, being desirous of serving my friend, I promised shortly to give him a definite answer to his question."

Tartaglia then proceeds to give an account of his attack upon the problem set him by his friend and goes on to remark: "As the result of this I had the intention of writing a treatise on the art of artillery, and to bring it to a degree of perfection capable of directing fire in all circumstances, assisted only by a few particular experiments. For as Aristotle says in the seventh book of the *Physica*, Section 20, 'particular experiments are the basis of universal science.'

"But, since then, one day meditating to myself, it had seemed to me that it was a thing blameworthy, shameful and barbarous, worthy of severe punishment before God and man, to wish to bring to perfection an art damageable to one's neighbor and destructive to the human race, and especially to Christian men in the wars that they wage on one another. Consequently, not only did I altogether neglect the study of this matter and turned to others, but I even tore up and burnt everything which I had calculated and written on the subject, ashamed and full of remorse for the time I had spent on it, and well decided never to communicate in writing that which against my will had remained in my memory, either to please a friend or in teaching of these matters which are a grave sin and shipwreck to the soul."

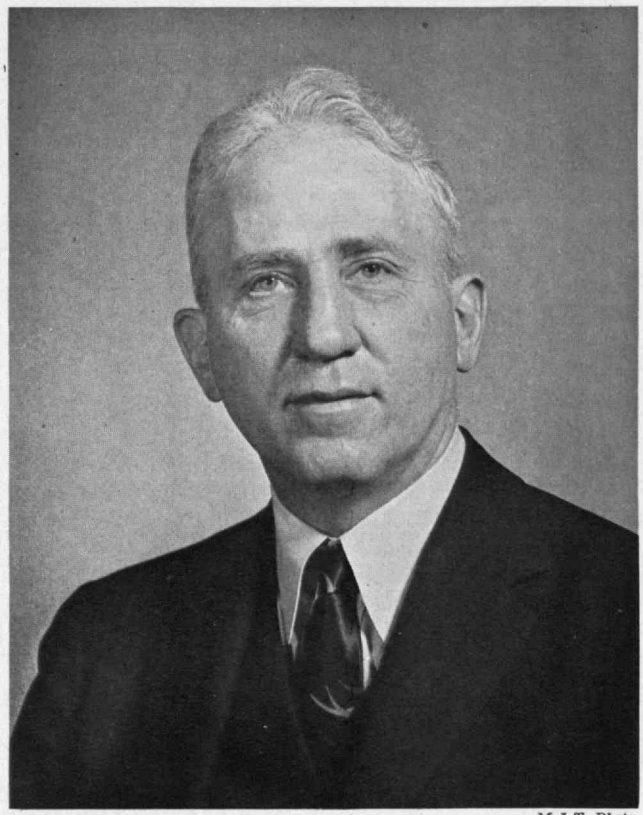
In view, however, of preparations for the invasion of Italy by the Turks, who were instigated by his Most Christian Majesty the King of France, much as Hitler in our own time plays Mephistopheles to Japan's Faust, Tartaglia suffered a change of mind, and so he writes: "Today, however, in the sight of the ferocious wolf preparing to set on our flock, and of our pastors united for the common defense, it does not seem to me any longer proper to hold these things hid, and I have resolved to publish them partly in writing, and partly by word of mouth for the benefit of Christians, so that all should be in a better state either to attack the common enemy or to defend themselves against him. I regret very much at this moment having given up this work, for I am certain that had I persevered I would have found things of the greatest value, as I hope yet to find. . . . I hope that your Lordships will not disdain to receive this work of mine so as better to instruct the artillerymen of your most illustrious government in the theory of their art, and to render them more apt in practice."

As far as I have been able to discover, this represents the first published statement of its kind made by a scientist. Leonardo's remarks in connection with his submarine were not published until almost four centuries after his death. Tartaglia admirably expresses the feelings of many scientists today.

Perhaps one of the most remarkable previsions of the diabolical uses to which aircraft would be put by men was uttered by Father Francesco Lana, an Italian Jesuit monk who, in his book *Prodromo* published in 1670, described in considerable detail an airship which would be moved through the air by paddles. After enumerating the six technical objections that he foresaw to his invention, which owing to his poverty he was unable actually to construct, he goes on to say: "Other difficulties I see not, which may be objected against this invention, besides one which to me seems greater than all the rest, and that is, that it may be thought that God will never suffer this invention to take effect because of the many consequences which may disturb the civil government of men. For who sees not that no city can be secure against attack, since our ship may at any time be placed directly over it, and descending down may discharge soldiers; the same would happen to private houses and ships on the sea. For our ship descending out of the air to the sails of sea-ships, it may cut their ropes, yea without descending by casting grapples it may overset them, kill their men, burn their ships by artificial fireworks and fireballs. And this they may do not only to ships but to great buildings, castles, cities, with such security that they which cast these things down from a height out of gunshot cannot on the other side be offended by those below." (*Continued on page 334*)

THE INSTITUTE GAZETTE

PREPARED IN COLLABORATION WITH THE TECHNOLOGY NEWS SERVICE



M.I.T. Photo

Henry E. Rossell, '15

To Build Ships

HENRY E. ROSSELL, '15, Professor of Naval Construction at the Institute, has been elected president and general manager of the Cramp Shipbuilding Company in Philadelphia, and Garland Fulton, '17, who has been chief engineer since 1941, has been elected vice-president. Professor Rossell has been granted a leave of absence to accept his new post in one of the country's oldest and most famous shipbuilding companies. He succeeds Rear Admiral William G. DuBose, United States Navy (retired), who becomes chairman of the executive committee of the board of directors. Professor Rossell, who joined the staff of the Department of Naval Architecture and Marine Engineering in 1931, is a commander, and the new Vice-president is a captain, on the retired list of the United States Navy.

Having been engaged since 1940 in an advisory capacity on the rehabilitation and equipment of the Cramp shipyard, Professor Rossell is thoroughly familiar with the operations of the company. He also has made special studies of welding sequences in the construction of naval vessels and has been a consultant for maritime companies.

After a two-year tour of sea duty following his graduation from Annapolis in 1910, Professor Rossell did postgraduate work in naval construction at the Institute. From 1915 to 1920 he was on duty at the New York Navy Yard in various administrative capacities, and from 1921 to 1925 served at the Philadelphia Navy Yard, the greater part of the time as production superintendent. From 1927 to 1931 he was detailed as head of the department of mathematics at the United States Naval Academy. While department head there, he wrote a paper dealing with the development of welded bulkheads for ships, giving the results of research which he had directed while in the Bureau of Construction and Repair. The research gave a strong impetus to the widespread adoption of electric welding in the shipyards of the country. The Cramp yard, incidentally, was the first "all-electric" yard.

Professor Rossell is the author of a number of professional articles and was co-editor of *Principles of Naval Architecture*, a two-volume work recognized as an authority in its field. The publication was sponsored by the Society of Naval Architects and Marine Engineers. A member of the council of the Society of Naval Architects and Marine Engineers, Professor Rossell is also a member of the United States Naval Institute, the Institution of Naval Architects, London, and the Northeast Coast Institute of Engineers and Shipbuilders, Scotland.

Captain Fulton was graduated from the Naval Academy in 1912. Following two years of sea duty, he was selected for a postgraduate course in naval architecture and marine engineering at Technology. Upon completion of this course, he was transferred to the Construction Corps of the Navy and assigned to duty at the New York Navy Yard. Thereafter he held various engineering assignments in Washington and elsewhere.

Revision of Courses

AN administrative committee appointed to study revision of certain parts of the Institute's curriculum has recommended that the undergraduate Course in Public Health Engineering and the undergraduate Course XI, Sanitary Engineering, be discontinued and that undergraduate studies in sanitary engineering be offered as group electives leading to the degree of bachelor of science in Civil Engineering. The committee also recommended that a graduate program leading to the degree of master of science in either Sanitary Engineering or Public Health Engineering be continued under the direction of the Department of Civil and Sanitary Engineering.

This revision of Courses follows the suggestion of the Visiting Committee of the Department of Biology and Public Health, which had earlier recommended that the awarding of degrees in Public Health be discontinued and that a study of other Courses be made to consider the possibility of consolidation or revision to prevent duplication.

The undergraduate Course XI, Sanitary Engineering, will be discontinued after February, 1944, permitting students at present enrolled in it to complete their program. The new program in the Department of Civil and Sanitary Engineering will start in June and will be open to students who have completed the sophomore year in Civil Engineering.

Reports and Hobbies

MEETING in Walker for the last time for the duration, the Alumni Council, at its 230th session on the first Monday in March, heard numerous reports of officers and committees and had as speaker of the evening Arthur C. Watson, chairman of the Committee on the Technology Museum, who described the varied activities of the M.I.T. Hobby Shop, which has developed under his guidance. In the absence of Francis A. Barrett, '24, President of the Alumni Association, the meeting was conducted by Harold Bugbee, '20, Vice-president.

Business included a survey of the very successful Alumni Day 1943 by Herbert R. Stewart, '24, chairman of the banquet committee, reporting for D. Walter Kendall, '24, chairman of Alumni Day 1943. In his regular report, Charles E Locke, '96, Alumni Secretary, explained changes in the bylaws necessary to adjust dates to permit the combining of ballot and Alumni Fund mailings, and presented the annual election slate summarized in The Review for March. A description of the growth of the Alumni Fund over the past three years was made by Henry B. Kane, '24, Director of the Fund.

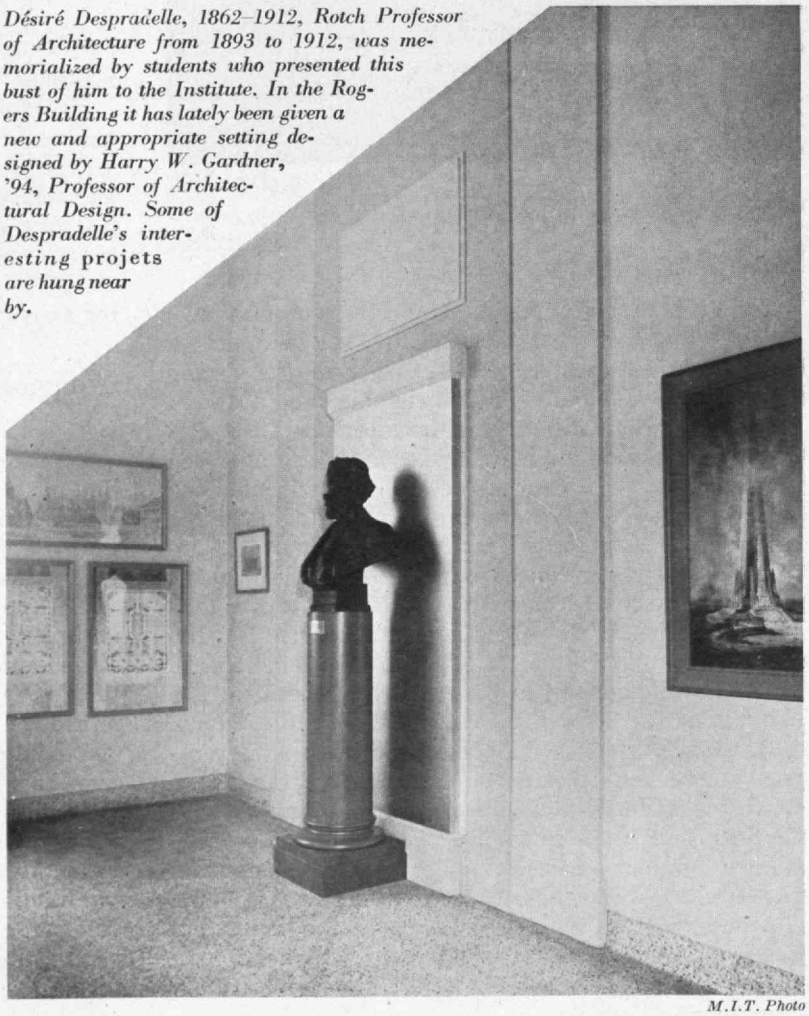
Sketching the origins of the Hobby Shop in freshman hobby shows held at Open House in 1936 and 1935, and in an earlier survey of the avocations of freshmen, Mr. Watson described the beginning program out of which the present organization has grown, its early stages being guided by Vannevar Bush, '16, then Vice-president of the Institute. Management of the shop was placed in the hands of the Museum Committee, Mr. Watson said, but from the beginning many staff members throughout the Institute have warmly co-operated. Policy has been to allow the students maximum freedom in the running of the shop. The machines were set up originally by a group of students, who built benches and tool racks and generally took the responsibility for seeing things get started. Later the group organized to perpetuate the tradition, made rules for safety, arranged lectures and exhibits, published their own newspaper, and otherwise kept up a co-operative spirit.

The shop is also used for the building of Museum exhibits, and many students have felt privileged to use their ingenuity in contributing to some of the best displays now seen in the corridors of the Institute. Not only technical problems but human problems as well are worked out in the shop, Mr. Watson explained. He showed a number of slides to give a better idea of the shop, its equipment, and its operations. Raymond P. Mork, '43, and Benjamin F. Pugh, '45, assisted Mr. Watson in his presentation, which evoked not only interested questions but also the offer of various materials and equipment for furthering the hobby program.

Women in Engineering

ALTHOUGH women have been quick to accept the opportunities opened to them by the insistent demand for labor in war industry, few of those whose educational background equips them for intensive training for technical positions realize that the engineering professions have also made available posts which a few years ago were closed to women. Prejudice against women in engineering, born perhaps in the vanity of man, is rapidly disappearing, and the contributions of the young women who have been quick to realize their potentialities have astonished industry.

Latest reports indicate that approximately 40 per cent of the workers in England's industries are women and, in addition, thousands of girls occupy technical positions of professional rank which are of critical importance to the progress of the war program. Women with college degrees in science, engineering, or economics



Désiré Despradelle, 1862–1912, Rotch Professor of Architecture from 1893 to 1912, was memorialized by students who presented this bust of him to the Institute. In the Rogers Building it has lately been given a new and appropriate setting designed by Harry W. Gardner, '94, Professor of Architectural Design. Some of Despradelle's interesting projets are hung near by.

M.I.T. Photo

have the requisite qualifications for further intensive training, preparing them to play an important part in the nation's war effort. In some engineering fields, high-school or junior-college certificates fulfill the requirements for special training programs.

Most of the courses now being given at the Institute under the sponsorship of the Engineering Science and Management War Training Program are open to women, and in every instance successful completion of a course has led to immediate employment in responsible, well-paying positions. All the young women trained at the Institute in the aeronautical engineering course last year are making important contributions in professional engineering positions in the aircraft industry. Many more could have been placed.

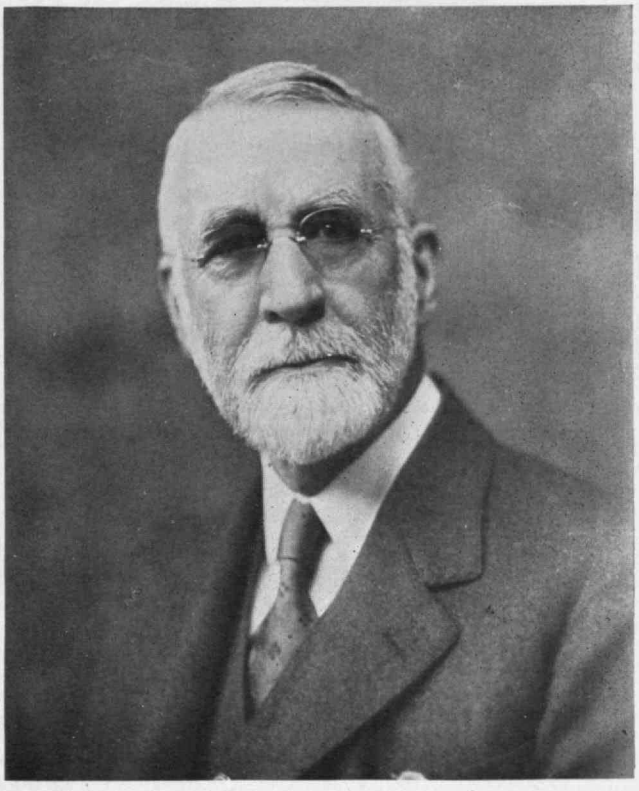
Recently the Institute started a 16-week course in naval architecture and marine engineering to qualify women for positions as junior naval architects under Civil Service in shipyards throughout the country. Meteorology is another field in which women can find excellent opportunities, not only during the war emergency but when peace returns. Other fields which are of special interest to women in the war emergency are chemistry, engineering drawing, industrial management, map drafting and interpretation, mathematics, radio communication, motor traffic management, optical instruments, applied physics, planning and scheduling, production control, purchasing methods and procurement, structural analysis, contracts, priorities and allocations, and work simplification.

Charles T. Main, 1856–1943

CHARLES T. MAIN, '76, distinguished engineer and a life member of the Institute's Corporation, died on March 6. He was 87 years old and until recently had been active in the affairs of the engineering firm which bears his name.

After his graduation from the Institute, he served for a year as an assistant on the staff of the Department of Mechanical Engineering, from which he withdrew to begin an engineering career that was closely associated with the development of New England's great textile mills in Manchester, N. H., and Lawrence, Mass. He became an authority on construction of both steam- and water-power developments for textile plants, and he was widely consulted in this field. In 1893, Mr. Main joined with F. W. Dean to form the firm of Dean and Main, after the dissolution of which in 1907 Mr. Main established the firm of Charles T. Main. He held the important post of consulting engineer for the construction division of the United States Army in the first World War, and he was one of a number of leading American engineers who went to France as members of the American technical delegation that assisted the French Government in the vast task of rehabilitation.

As an alumnus of the Institute, Mr. Main showed a lifelong interest in the activities of Technology. For years he had served as secretary of his Class, and he was president of the Alumni Association in 1901. Having been a term member of the Corporation for 10 years, he was in 1918 elected a life member and served on the Executive Committee for many years.



Charles T. Main, '76

Mr. Main was a fellow and past president of the American Society of Mechanical Engineers and a holder of its 50-year button. He was also a former president of the Boston Society of Civil Engineers, was awarded its Desmond Fitzgerald Medal in 1914, and was made an honorary member in 1932. At one time he was president of the American Institute of Consulting Engineers, and he had been a member of the Newcomen Society and the American Academy of Arts and Sciences. Northeastern University awarded him the honorary degree of doctor of engineering in 1935.

In 1883, Mr. Main married Elizabeth F. Appleton of Somerville. Of their three children, two survive — Theodore Main, '16, and Alice Appleton Main. Mr. Main's older son, Charles R. Main, '09, who shared his father's constant interest in the Institute — having been secretary of the Class of 1909 and a term member of the Corporation — died last August 22.

Director of Research

MANUEL S. VALLARTA, '21, Professor of Physics and internationally known for his investigations of cosmic radiation, has been granted a leave of absence to serve as executive chairman of the Mexican Council for the Promotion and Coordination of Scientific Research. This position, to which Dr. Vallarta was recently appointed by Avila Camacho, President of Mexico, corresponds to the post held by Vannevar Bush, '16, director of the Office of Scientific Research and Development in Washington.

Dr. Vallarta is a fellow of the American Physical Society and the American Academy of Arts and Sciences.

RESEARCH AND PATENTS

(*Continued from page 309*)

is open to newcomers who can contribute substantial patent assets, it is an altogether healthy thing. Certainly it is an efficient method of getting new developments into prompt production without awaiting the result of lengthy litigation.

OF course our patent laws from time to time need revision to meet changing conditions and avoid possible abuses. Such revision is done when necessary; the commissioner of patents suggested not long ago a number of administrative changes, which had general approval of those closely concerned with patents. Most of them have already been adopted. This discussion is concerned rather with more drastic suggestions which have been urged by various individuals and which have not received such general support.

The present system of licensing under patents is the first target that comes under heavy fire in these suggestions. Various types of provisions for compulsory licensing are vehemently advocated by some critics of our system. Others argue with equal stridency for the prohibition of restrictions in licenses.

The argument generally used in favor of compulsory licensing is that many patents are used to suppress inventions. If that were true, there would admittedly be argument for some form of compulsory licensing, but to the best of my knowledge none of the extensive hearings on patent matters has dug up a single authentic case of this kind. In all my experience dealing with patents and inventors or trying to get licenses, I have never found a patent owner who took that attitude. Frank B. Jewett, '03, whose experience in this field is unexcelled, wrote not long ago:

> Despite the fact that I have made diligent inquiry over the years I have never been able to locate a suppressed patent nor have I ever found any one who could cite an authentic case of suppression. . . . The plain truth of the matter is that a large part of unused patents are worthless things which the inventors insisted on patenting and on which the Patent Office had to issue patents because the ideas presented were technically new and novel — the Patent Office does not pass judgment on the utility of the patents it grants. They are not and never were anything anybody would use, in the face of better things, even if you gave the patents to him.
>
> Then there is the great group of unused patents which, although they may have had original merit, were rendered obsolete by subsequent inventions. Except for patents on really fundamental new ideas every new patent tends to kill the value of those which preceded it. . . . The only possible way for a business at all dependent on live patents to avoid extermination in the competitive struggle is to keep eternally at the process of replacing its dead and dying patents by new and better ones, and that mainly by its own creative effort.

Recent headlines about the suppression of patents on devices needed for war are nothing more than imagination, because legislation dating from the last War provides in effect for compulsory licensing of any patent needed by the government in time of war. Accordingly the whole matter should be dissociated from the war and regarded calmly from a long-range point of view.

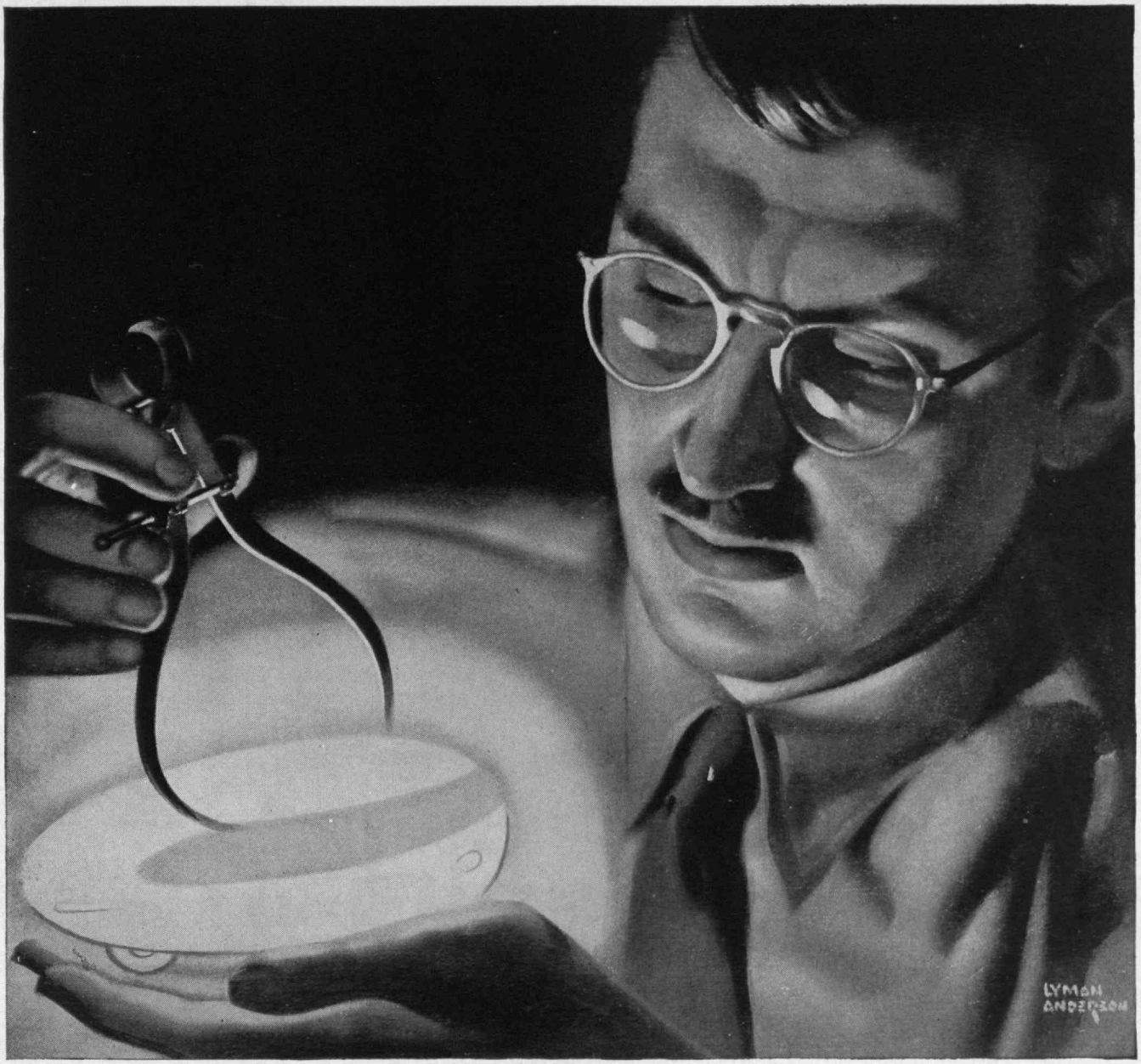
The greatest objection to compulsory licensing in normal times is that it largely cancels the very reward the inventor was supposed to receive. It also interferes with the incentive of the patent owner or licensee to make a large investment in a new development, because he is confronted with the possibility that he may at any time be forced to give a competitor a license on terms which are unpredictable. If some way existed whereby one could properly determine a fair royalty and other reasonable terms in the event of compulsory licensing, much of the objection to it would be overcome. Inventions are so widely different in character and in the investment required to develop them, however, that it is impossible to set up any general standards as to the proper terms for a license. The old American art of horse trading between the patent owner and the man who wants a license is often time consuming and annoying, but it is probably the best way to arrive at the fair value of a license, and it has the further advantage of generally being open to readjustment as conditions change.

The proposal is sometimes made that the value of the compulsory license be arbitrated. While the principle of arbitration appeals to everyone as reasonable, the intangible factors make arbitration peculiarly difficult in the granting of a patent license: Both the terms and the royalty rate are open to so much trading back and forth, with past licenses under other patents often constituting part of the consideration, that a decision is even harder to reach than in the case I previously mentioned of determining the value of a single patent. Furthermore, the patent owner is at a peculiar disadvantage in such an arbitration in that he would be compelled to grant a license on the terms set by the arbitration, whereas if the prospective licensee who requested the arbitration did not like the terms, he could always find some reason for not going ahead with substantial use of the patent. Arbitration in such a case, therefore, is really one-sided, binding only on the patent owner.

Compulsory licensing would militate most seriously against individuals and small companies that would have to go outside to secure financing to further and exploit their patented developments. Venture capital cannot be attracted into new and hazardous fields without the prospect of unusual returns, which compulsory licensing would prevent.

While the granting of a patent monopoly seems virtually essential to afford an adequate incentive for research and invention, which every year become more expensive and difficult, yet once the invention has been disclosed and the patent granted, it is thereafter in the public's interest, and usually in the inventor's interest, to have licenses granted to as many people as can make effective use of the invention. Any license, however restricted, is in essence a voluntary concession of part of the owner's rights under his original patent monopoly. In disposing of part of his monopoly, the patent owner naturally must make clear just what he is giving away and what he is retaining for himself. Limitations in licenses, however, have recently been under heavy attack as though they were fundamentally undesirable, and legislation forbidding almost any such limitations has been proposed.

(*Continued on page 322*)



30,000,000 motorists will hold their breath

WE Americans might now be staring grimly at defeat if we had not thrust our industrial economy ten years forward over night. To do it we have drastically cut our own standard of living.

When it is over, when gasoline, tires, and the leisure to use them, are once again available, 30,000,000 motorists will hold their breath. Will look to Detroit for cars wrought of plastics and light alloys, cars that can whisper the miles away on a few cupfuls of fuel. For Americans picture an all-out peace when they finish a total war.

Never has an industry been able to feel surer of its market. And never have manufacturing problems appeared so complex. Innumerable materials will be available. Which should be employed for what? How can it be used to speed production, to better performance, to prolong service, to quicken sales?

For impartial answers, industry can bring questions about metals to Revere. For just as industry in the future will not be restricted to the traditional materials, neither will Revere. In addition to widening still further the uses for copper and its alloys, Revere has developed facilities for the manufacture of the light metals since the start of the war, and is pioneering in the production of wholly new alloys with important properties that can cut manufacturing costs for many industries.

Today the copper industry is producing only for victory. Copper is not available for anything else. But post-war planners with specific problems in metals are referred directly to the Revere Executive Offices in New York.

REVERE

COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

Executive Offices: 230 Park Ave., New York

RESEARCH AND PATENTS

(*Continued from page 320*)

Actually, the net effect of drastic provisions against restrictions in licenses is likely to be the opposite of that intended. The practical aspect of this statement can possibly be best illustrated by another reference to the analogy of the ownership of land. Suppose a man is asked to grant a right of way for a road across a tract of land which he owns. He would probably be quite willing to grant such a right of way provided he received reasonable compensation and could protect his own rights in the remainder of the land by providing that the man who acquired the right of way must keep a certain distance from the landowner's house, construct and maintain fences, and agree not to trespass on the remainder of the land. These provisions are restrictive as to the rights and the duties of the man who acquires the right of way, but the important thing is that the latter does not lose any rights he ever had; he simply agrees to definite limitations on the new rights which he acquires. Now if a law is passed saying that all grants of rights of way must be unrestricted and without any limitation, the landowner will certainly be much less willing to grant rights of way; or if he does grant them, he will charge much more. Exactly these considerations apply to many of the proposed prohibitions against restrictions in licenses. It should be made as easy as possible for a man to chip away his monopoly gradually, however small the individual pieces.

One set of proposals, put forward last spring in Senate Bill 2491, would specifically outlaw any restrictions as to (1) price, (2) quantity permitted to be manufactured, (3) geographical limitations, and (4) use to be made of patents.

The modern trend in licensing, at least in the industries with which I am most familiar, is away from all restrictions on the price or quantity of patented articles to be produced under a license. Hence I cannot argue strongly against the prohibition of such restrictions. Even such prohibitions, however, would tend to discourage licensing or force up royalty rates in certain instances where a patent owner feels that such restrictions on first sale are necessary for his self-preservation.

The matter of prohibiting geographical restrictions is much more serious. For example, take a man in the East or Middle West who is manufacturing an article on which the freight to the Pacific Coast is quite large. He might be approached by a Pacific Coast manufacturer who wanted a license, and since the patent owner could not readily fill this market himself, he would be glad to grant a license if it could be limited to manufacturing on the Pacific Coast. If, on the other hand, geographical restrictions were prohibited so that he could not grant a license without throwing open the whole world to his licensee, he would probably decide to give no license at all, and the Pacific Coast would continue to suffer from the lack of a convenient source of supply.

Even more unfortunate would be the practical effect of the proposed prohibition of any limitations on the use which a licensee might make of a patented process or apparatus. The suggestion entirely overlooks the way most licenses are desired and granted by the majority of companies operating in the process industries. Suppose the X oil company owns a patent on a process capable of being used to make products of high value such as 100-octane gasoline, as well as products of relatively low value such as kerosene. If Y company wanted to take a license on this process for the purpose of making kerosene, it would undoubtedly say that it could afford to pay but a small royalty under these conditions. The X company would probably agree, provided that Y company used the process only for making kerosene. If, however, Y company later wanted to use it for making 100-octane gasoline or some other product of high value, such a royalty would be unreasonably low. Since a fair royalty for every possible use to which the licensee might want to put the process could not be determined in advance, it would best suit the needs of both X and Y companies to set a royalty rate for the use or uses definitely contemplated and limit the license to such uses. If the X company were permitted to give only an unlimited license for unknown future uses, it might well decide not to grant any license at the low rates appropriate for the making of kerosene.

Furthermore, although the Y company would be primarily interested in getting a license on only one or two specific patents, it would undoubtedly want, and expect to get, drawings and designs for complete equipment to carry out the process. In the design of that equipment might be half a dozen minor patented devices which neither X nor Y might have in mind. If Y were well advised, it would insist that it have the right to use any of X's patents in carrying out the specific process, and X might well agree to this "throwing in" of all incidental patents, provided that the uses of them were limited to the process under discussion; on the other hand, it would certainly not throw in all of its patents for use in any process which might come along, merely for the payment of a small royalty based on a kerosene operation. The great bulk of the process licenses granted in our industry do not attempt to enumerate all the patents and applications which might be useful in a given process but give a blanket license under any of the patent owner's present or future patents for the defined process. Such broad licensing of all the licensor's patents for the desired use, which is certainly very much in the public interest, would be made impossible by the proposed type of restriction.

(*To be continued*)

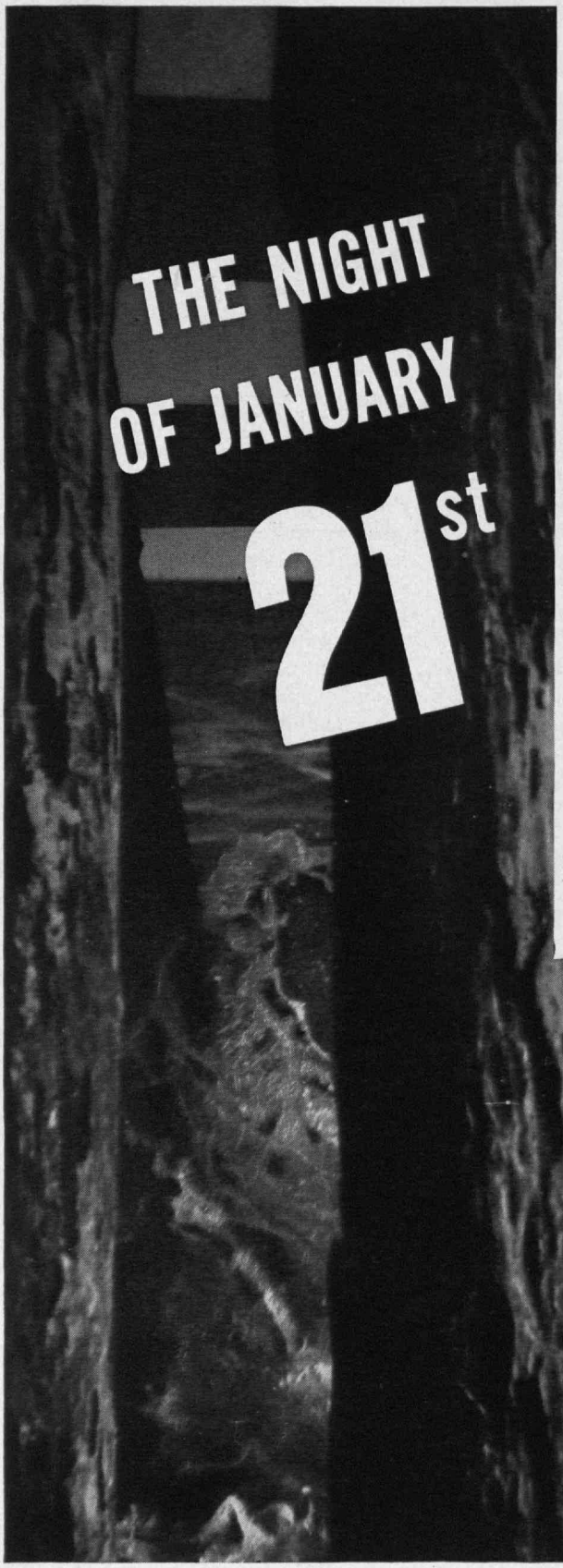
MAIL RETURNS

(*Concluded from page 298*)

ished populations desire and are able to buy — in general, machine-made articles duplicating as nearly as possible the hand-built utensils, tools, clothing, and so on, they are now in the habit of using.

The abolition of poverty — for the world is headed for no less a goal — is attainable through free gift only a little. It is attainable chiefly by the hiring of poor peoples at work they are best fitted to perform and by the sale to them of goods within their financial reach in order to give them a reason for working. I would hazard a guess that a firm realizing the coming trend and joining it, or anticipating it even before the war is won — wherever opportunity is to be found — will fare better financially than one which does not.

New York, N. Y.



It happened barely two years ago — on January 21, 1941 — and already it is changing the shape of the world. On that night, men held in their hands a bar of the world's lightest metal — the first ingot of pure magnesium to be taken from the sea.

The men were chemists and engineers of Dow Chemical Company, and the metal mermaid which they held that night was the creature of many years of experiment in the field of ocean mining. As a result of those years of search and research, most of our production of over 200 million pounds of magnesium this year will come from the limitless sea, and plants are building for the production of many times that amount. . . . Also as a result of those years, a whole new age of light metal parts, products — and problems — has begun.

Today, 99 per cent of all magnesium production is going into aircraft. But after this war, with a wealth of experience, new techniques and a yawning capacity, magnesium will be ready to bid for other markets; streamliners, busses, trucks, trailers, engine forgings, household appliances, building materials, and the whole broadening field where weight and load factors are of increasing importance. And with this new production will come the problems.

As specialists in internal grinding — with engineers and machines on nearly every aircraft production line in America — we at Bryant have had a great deal to do with parts made from lightweight metals.

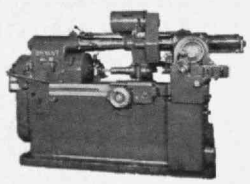
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For 30 years we have been one of the leading makers of packaging machinery. Our machines are used by hundreds of concerns—in the food, drug, candy, tobacco, dairy fields, etc. Many of the advancements in mechanical wrapping now widely used were conceived by our Engineering and Designing Departmen.

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● You may have ideas for new machinery which need development. We will be glad to discuss them with you, and if mutually satisfactory, will develop them with you.

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Final arrangements may result in your coming into our Company—or may be worked out on some other desirable basis.

If you feel that you have something on which we might work together, we suggest that you communicate with us, giving full particulars. We can then arrange for a meeting.

PACKAGE MACHINERY COMPANY
Springfield, Massachusetts

ALONG THE ALEUTIAN ROUTE

(*Continued from page 312*)

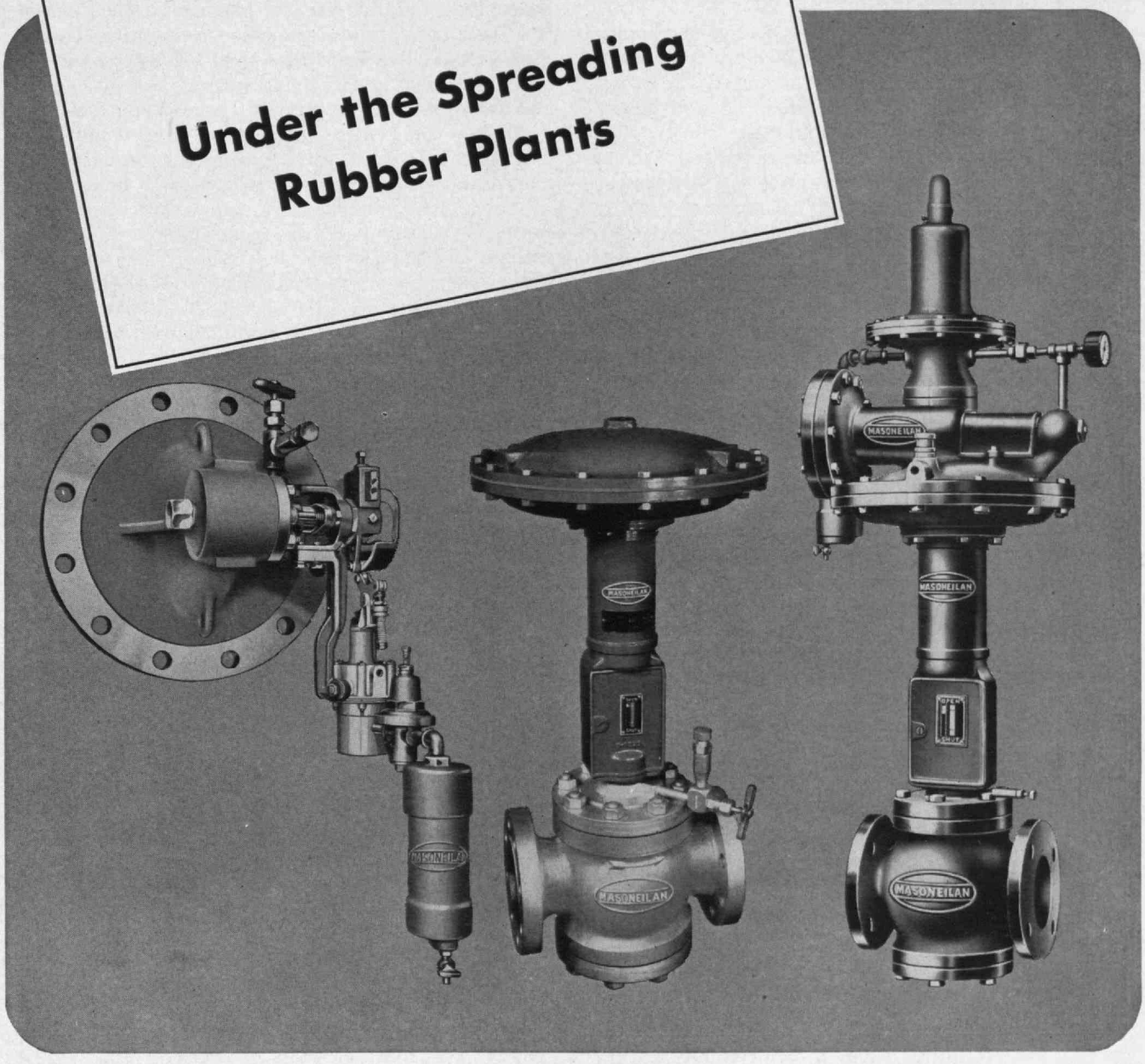
it is a closely guarded secret. It is known, however, that they use the young roots of the *Aconitum japonicum*, a plant which grows in many sections of Hokkaido and is distinguished by its pretty purple blossoms. The roots, gathered in summer and dried in the shade, become soft. They are skinned, and the pulp is rubbed between two stones until a paste is formed. The addition of a little fox gall and the saying of proper prayers during preparation are supposed to render the poison particularly efficacious. A poison-maker fearlessly tests the strength of his concoction by placing a bit of it on the tip of his tongue. If right, it produces a peculiar sense of tingling, followed by numbness. When finished, the poison is placed in the sun to dry and thereafter is wrapped in a leaf with several fetishes, to be kept until needed. It maintains potency for about half a year. When required for use, the poison is again pounded and made soft. Sometimes a few mashed spiders and the poison from a scorpion are added. The poison is used to tip arrows used in hunting bear, deer, and large game. When the poison is to be applied, the arrowhead (generally made of bamboo) is hollowed out behind the tip. It is dipped into pine-tree gum, and then the poison is pressed into the depression with the thumb. This finished, the arrow is once more dipped into the gum, after which a leaf is tied around it for protection before it is placed in the quiver. In addition to hunting with the bow and arrow, the hunter sets traps along the trails frequented by wild animals. As the trap is touched off, a poisoned arrow is released, the mere prick of which is sufficient to kill an animal or man within 15 minutes. A stranger wandering in the woods is in greater danger from death by poison than from attack by the ferocious wild bears which roam the forests. When a hunter has been accidentally injured by a poisoned arrow, the only method he has to save his life is to cut a large hunk of flesh from the wounded part before the poison spreads. Hunters with courage enough to take this drastic measure frequently bleed to death.

Another interesting poison used by the Ainus especially in bird hunting, is made from the roots of a milkweed called *penup*. This root may be gathered either in the spring or in the fall after the leaves have been killed by frost, and it may be used in the fresh or dried state. Indeed, people hang it from the beams of their houses and use it in many ways. A few *penup* roots suspended over the doorway will serve to discourage the entrance of the evil spirits and ghosts which the Ainus believe to cause sickness. When there is illness in an Ainu home, the roots of the *penup* are chewed and sprayed by mouth throughout the house. In an epidemic, the inhabitants of the entire village engage in blowing *penup*. The uses for the root are many, and claims made for it sound like an advertisement for a patent medicine. It is efficacious as an antidote for food poisoning, stomache-ache, and smallpox. Men wear bits of the root as an amulet tied about their waists, while women hang it about their necks as a charm, incidentally ready for instant use. Eaten raw, *penup* has a not unpleasant, sweetish flavor

(*Continued on page 326*)



Under the Spreading Rubber Plants



When some day the wheels of the nation roll on tires made by the synthetic rubber plants now spreading across the country, it will be because automatic controls made the processes possible. And many of these controls will include Masoneilan equipment. Rubber plants already operating and others to come will depend on the accuracy, in-built quality and sturdiness of this equipment which has earned it a top spot in the esteem of the process industries.

If some of our friends are unable to obtain Mason-Neilan equipment when they want it, remember that the most vital war-winning industries come first. That controller you wanted may be helping to make the tires on which the jeeps will roll into Berlin.

MASON-NEILAN REGULATOR CO.
BOSTON, MASSACHUSETTS

MASONEILAN
REG. U.S. PAT. OFF.

ALONG THE ALEUTIAN ROUTE

(*Continued from page 324*)

and, like marijuana, produces an intoxicating effect followed by faintness. Yet when thoroughly cooked, the roots are palatable.

Ainus find this poison especially effective in trapping the Bering Island raven, which flies down from Kamchatka to northern Hokkaido for the winter. The hunter prepares the bait by digging the flesh from a salmon, mixing it with *penup*, and restuffing the fish. He then puts the fish in places the raven frequents, and waits in ambush. After feasting on the poisoned salmon, the raven loses control of its wings and legs and flounders helplessly about like a drunken thing, easily captured. A crow may be brother to the raven, but he is made of tougher stuff. Having feasted on *penup* and salmon, he flies blithely away, unaffected, leaving a surprised hunter. The Ainus hunt the eagle in exactly the same interesting manner as do the people of the arctic Lofoten Islands. Ambushed near the place frequented by the eagle, the hunter snares its leg with a hooked wire. Unlike the Lofoten Islander, the Ainu saves himself the trouble of struggling with the angry eagle by quickly chewing *penup* and spitting it into the face of the king of birds. This has the effect of quieting it at once.

The aborigine used ingenuity in contriving his farming, hunting, and fishing implements. In the early days each family staked out a soft spot of earth, and from crooked sticks improvised farm implements with which to cultivate a few vegetables. To the Ainu women fell the lot of caring for the homes, weaving, caring for the children, cooking, and farming; while the men hunted, fished, and attended to religious matters. For tramping the snow in winter in search of wild bears, the Ainus devised a crudely made but effective snowshoe from two bent pieces of flexible wood, fashioning it in the shape of the "bear paw" type of snowshoe in use in the United States today. The Ainus were great fish eaters, and the men were adept at fashioning seagoing dugout canoes, and fish spears of several types. Large salmon weighing up to 40 pounds entered their rivers in great numbers. The Ainu men used nets, spears, and during winter months hooks and lines dangled through holes made in the ice. They attracted the fish by torchlight. The *marek*, or salmon spear, was made from a 10-foot pole with an iron hook so fixed to the shaft that when the fish is struck with it, the hook flips over, the point enters the flesh, and the more the fish struggles, the tighter the hook holds. It resembles the cant hook used by lumbermen, only it is much, much smaller.

Japan has imposed many restrictions upon the Ainus. Until the time of the Meiji restoration in 1868, they were not permitted the use of money. As a substitute they bartered with beads, sheafs of tobacco, and bearskins. It is customary for an Ainu to have but a single name, assigned at birth by the village headman. When they planned to tax the aborigines, the Japanese discovered that Ainu names could not be spelled accurately in their characters. Officials, therefore, assigned a common Nipponese family name to all inhabitants in a

(*Concluded on page 328*)

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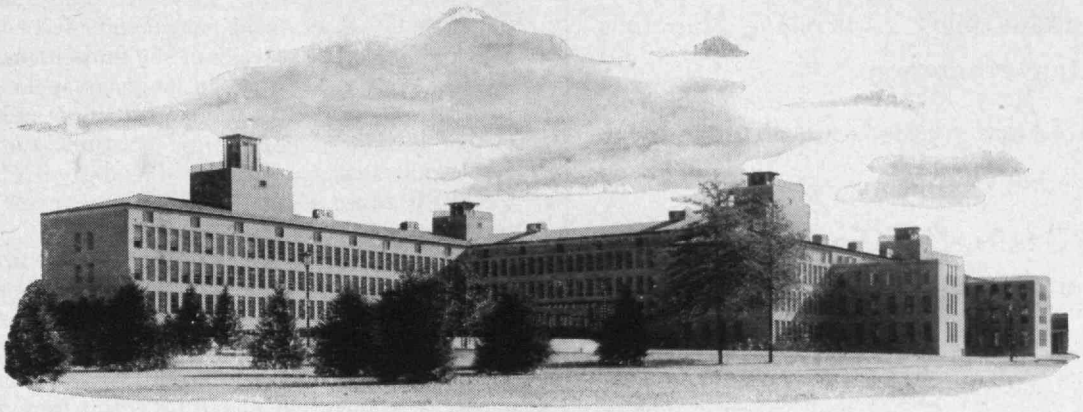
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ALONG THE ALEUTIAN ROUTE

(*Concluded from page 326*)

given village; all Ainus living in Penakori, for instance, are named Kawakami. Although their children are taught in the Japanese language, and adults must speak it in public, in the privacy of the grass homes the soft, musical, native Ainu is the language spoken by both parents and children. In an endeavor to make farmers out of nomad huntsmen and warriors, the Japanese Government assigned an acre of land to each family and forthwith taxed fishing and hunting, even for food, right out of existence.

Regarding the Ainus, the Japanese have run the gamut of emotions extending from fear through scorn to curiosity. Racial stigma was once attached to a Japanese born with wavy hair, but with the introduction of the permanent wave (before Pearl Harbor, the majority of Japanese women had waved hair) this prejudice disappeared. Recently, spurred by foreign anthropologists, the Japanese have evinced a curiosity about this strange race of men. Nipponese scientists have investigated them, and the University of Sapporo has established the largest Ainu museum in existence.

If the Ainus lack medical attention and suffer from preventable diseases, so do the Japanese settlers on Hokkaido. The Ainus have not fared well under the setup of colonial government, but neither have the Japanese colonists. The Japanese are not temperamentally suited to be either rulers of colonies or colonists. Lack of imagination and inflexibility are the greatest handicaps of the Nipponese who migrate as colonists. Thus the majority of the settlers on Hokkaido, an island with a very severe winter climate, dwell in paper and matchwood homes, unheated save for a few live coals in a brazier or *abeoi*, and dress in kimonos as they did in the milder climate of Japan proper. They do so despite the repeated advice of experts, who urge settlers to live in coldproof, heated houses, to wear woolen garments, and to increase their diet to include meat.

Physically the Ainus in no way resemble their masters. They are characterized by short, stocky bodies, round European eyes, absence of the Mongolian fold, and thick shocks of wavy, sloe-black hair. Known as the hairiest race on earth, the Ainus also have the distinction of possessing the largest skulls of any race extant. They have fine, white, even teeth. There is no accounting for their longevity considering their poverty-stricken existence, racked with preventable diseases.

For years it has been the custom to speak of the aborigines of Hokkaido as a vanishing, a doomed race. Seventy years ago the Ainu population was 12,281; today it is 16,000, an actual *increase* of 3,719. Wishful thinking probably impels the Japanese statistician who compiles the vital statistics to add to his figures a footnote stating that the Ainus are a rapidly dying race. Given $100 worth of the new drug used by the United States Office of Indian Affairs to cure trachoma, a few vitamin tablets, and an ounce of encouragement, this once virile race would flower again. By so doing it would confound all the anthropologists who, offering no material aid, have taken such pains to photograph and measure the corpse for posterity.

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THE ECONOMICS OF INNOVATION

(*Continued from page 314*)

view of the disturbances produced by rising prices, a check to inflation at this point might seem to be highly desirable. Obviously, prices cannot continue to rise forever. But unfortunately a business boom based on the expectation of price advances is likely to receive a disconcerting jolt when this expectation has to be abandoned. The prospect for profit will become less rosy. Optimism will be tempered by doubt; those who make decisions as to how much to produce will become more cautious. Some of the speculators on the security exchanges, sensing a chill in the business atmosphere, will begin to take their profits, and the prices of stocks will weaken. This development will further dampen the spirit of business enterprise.

Whether the forces of industry which had been moving forward will then begin to retreat depends to a large degree upon how far they had advanced. Just as an attacking army becomes more and more vulnerable to counterattack as its lines of supply and communication are extended, so the business system becomes more vulnerable as it moves forward on the road of prosperity. The farther it goes, the nearer do the banks approach the limit of their capacity for credit expansion; the harder are loans to get; the higher are interest rates marked up. Supply difficulties are encountered also with respect to labor and materials: The reserves of man power are not so good as the front-line troops; additional materials become costlier to produce.

Under these conditions, as the history of business cycles indicates, many important concerns will delay the execution of whatever plans they have for plant construction. They will note with some disquiet the tendency for interest rates and certain other costs to rise; they will fear the effects exerted on prices by the new consumers' goods that are coming off the production lines in increasing volume. Consequently, the demand for materials and labor in the construction industries will decline further, and from time to time the volume of savings will be in excess of expenditures for investment goods. As, periodically, some portion of the savings of the community is hoarded, the value of goods being offered for sale will be in excess of the money income being offered to purchase them. The forces making for equality will exert a downward pressure on the price level.

When prices begin to fall, the boom will collapse. Expectations of profit disappear in a falling market. The prospect of selling at tomorrow's lower prices the goods and services that were purchased at yesterday's higher costs, is enough to cause a curtailment of production. Moreover, the decline in the prices of many cost items is delayed by custom and established contracts. Thus prosperity turns into depression, and while the economic machine grinds painfully along in low gear, society is deprived of many of the commodities and services which the new technology is capable of supplying. At such times private enterprise falls into disrepute, and agitation grows for the substitution of a socialistic or authoritarian system of economic control.

(*Continued on page 332*)

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THE ECONOMICS OF INNOVATION

(*Continued from page 330*)

The foregoing observations should not be construed as a forecast of postwar events. Nothing has been said, for example, concerning the transition from war to peace. As armies are disbanded and military contracts are liquidated, we shall face the serious problem of maintaining output and employment by converting our war plants to civilian production. Unless we watch our step, this conversion period will be one of acute crisis. We are here concerned not with this crisis but with the long-run problem of maintaining income and employment after the transition from war to peace is made and after we begin to tackle the backlog of investment outlets being created in our scientific laboratories.

In thinking about the effects of technological innovation, we should bear in mind that this is not the only force which will be operating on our national economy. Changes in human attitudes and tastes, in economic, political, and legal institutions, in the rate of population growth, in the average age level, and in our relations with foreign countries may modify the effects of the scientific discoveries that are now accumulating. Moreover, the accumulation may not be so great nor its economic repercussions so far-reaching as some of us imagine. If, for example, the idle production capacity existing at the end of the war is very large or if the innovations are introduced slowly, the industrial system may be able to adapt itself to the changes without great difficulty. So many factors are unknown that one cannot predict with confidence. Yet the teachings of history and of economic analysis are sufficiently clear to put us on our guard. We may be fairly sure that the impact of a large and sudden expansion in the output of investment goods will tend to throw the economic system badly out of balance.

As to the measures that should be adopted to steady the system against the shock of this impact, there are much doubt and disagreement. One obvious method of approach is from the monetary side — to regulate through the Federal Reserve system the volume of funds furnished by the commercial banks, or to control through taxation (or other means of modifying the distribution of income) the amount of money which the community attempts to save. Another method of

(*Concluded on page 334*)

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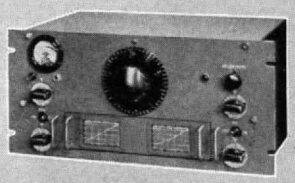
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Liquid

THE ECONOMICS OF INNOVATION

(*Concluded from page 332*)

approach is from the production side — to control the rate at which the new investment opportunities are exploited.

Control of the rate might be exercised either by agreement among private enterprises or by an agency of the government. Some economists visualize the necessity for the periodic introduction of public deficit expenditures to fill the gaps caused by the excess of savings over investment which appears from time to time. Others are inclined to favor a policy of nonintervention, believing a moderate depression to be a necessary period of readjustment, during which the economic system digests the innovations and renews its strength for another forward surge.

FOUR ON WAR

(*Continued from page 316*)

Father Lana need not have been so concerned about the possible misuse to which his own airship might be put, for that ship would never have left the earth even if it had been built. Nonetheless, in his mechanical ideas he was on the right track, while his prevision of things to come, with such devices as his own airship in the air, has been most horribly fulfilled to the last word. Leonardo was much more naïve than the good Father

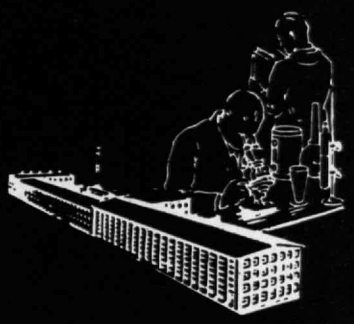
(*Continued on page 336*)

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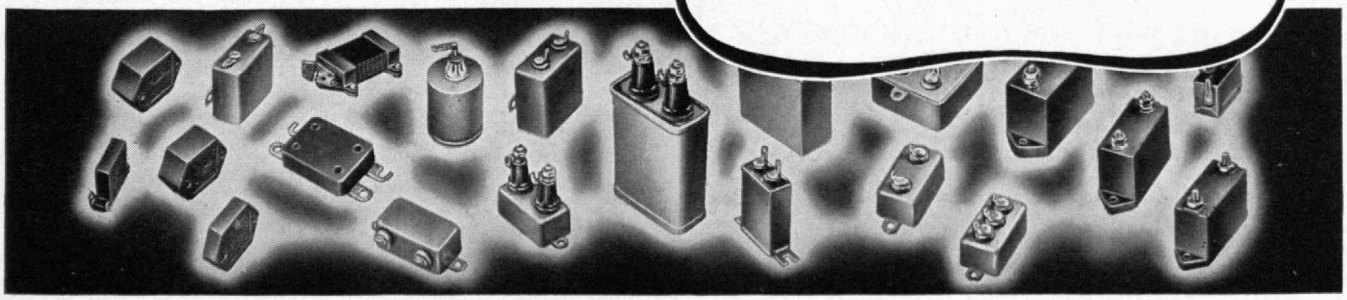
This means two things to you as a buyer:

First, it means that capacitor problems do not stay answered. Capacitors that were "good enough" a few months ago, may be entirely outmoded by new developments. Reversely, types not thought suitable for certain applications may have been improved to a point where their use is entirely practical—as witness Sprague's pioneering of satisfactory electrolytic capacitors for airplane use.

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FOUR ON WAR

(*Continued from page 334*)

Lana in his view of his attempts to construct a practicable flying machine. As he viewed the matter, the air was the one remaining element which man had not yet conquered, a birthright which would be his in the fullness of time, possibly through his, Leonardo's, agency. He did not think of man's wings as the wings of the angel of death, the wings of war, but rather as the wings of mercy, goodness, and greater happiness for all mankind.

Samuel Johnson (1709–1784) in his play *The History of Rasselas, Prince of Abyssinia*, written in January, 1759, makes the artist in the play, who had invented a flying machine, refuse to divulge his secret. "If men were all virtuous," he said, "I should with great alacrity teach them all to fly. But what would be the security of the good, if the bad could at pleasure invade them from the sky? Against an army sailing through the clouds, neither walls, nor mountains, nor seas, could afford any security. A flight of northern savages might hover in the wind, and light at once with irresistible violence upon the capital of a fruitful region that was rolling under them. Even this [the Amharic] valley, the retreat of princes, the abode of happiness, might be violated. . . . " As, alas, Mussolini's airmen were, nearly two centuries later, to prove in what they called their Ethiopian campaign, for which more humane people have another word.

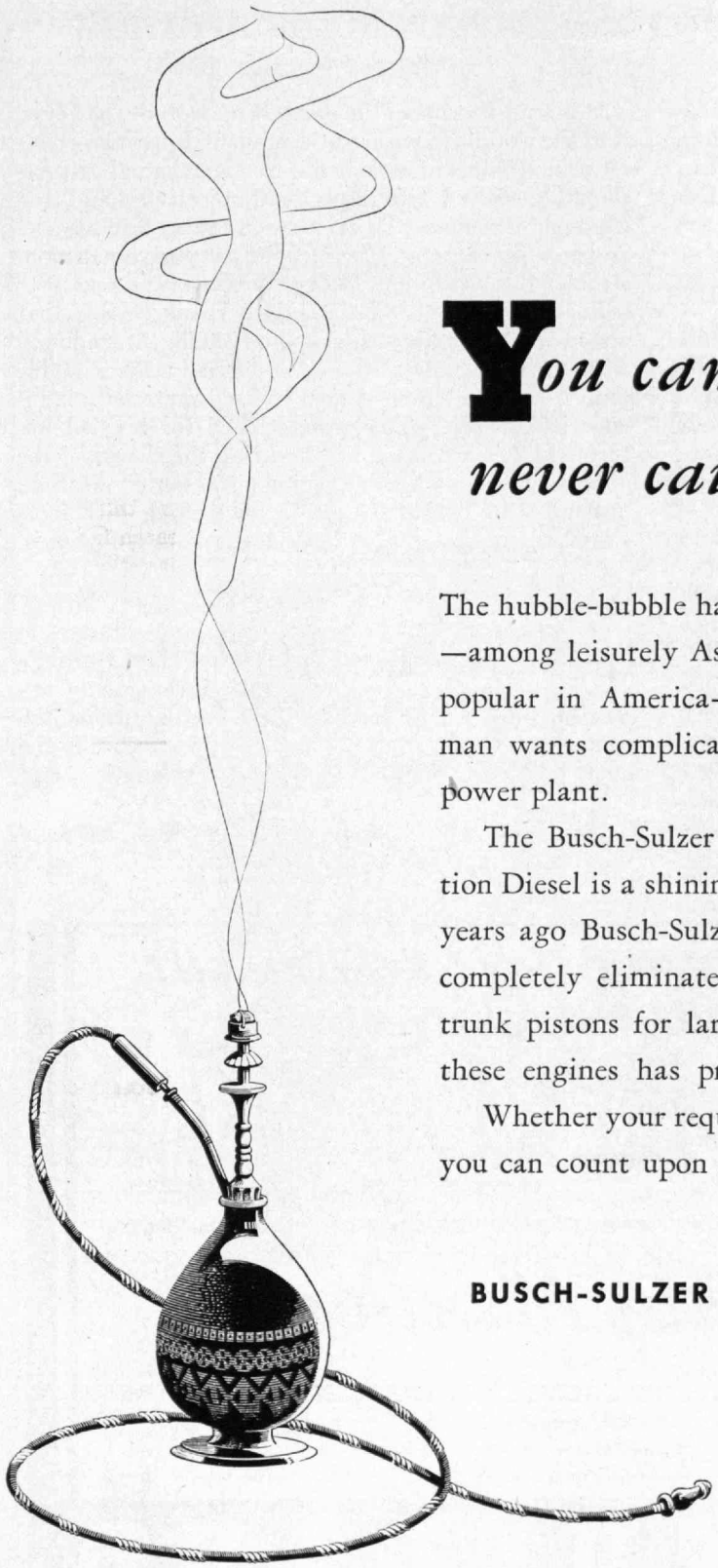
If we may jump ahead more than a century to the year 1887, the year in which Jules Verne's novel *Robur the Conquerer* was published, we may listen to the words of Verne through his aeronaut Robur: ". . . the state of mind is not ready for that important revolution which will one day accomplish the conquest of the air. . . . My experiment is premature. Science should not precede the mental capacity of the times. There should be evolution, not revolution. I have come too soon and find that the time is not yet ripe for my work."

Verne believed that rapid communications rendered all ideas of nationalism nonsensical, and he concluded that people must organize their lives morally and socially for a new technical period of progress if the dangers attending the abuse of machinery and invention were to be avoided. "I bear my secret with me," said Robur. "But it will not be lost to humanity. It will be found when the world is wise enough to profit by it and prudent enough never to abuse it."

Alas, it would seem that despite the best of intentions of men, the way to hell is often facilitated by good inventions. But let us come now to Benjamin Franklin. He had been present at the balloon ascents made by the Montgolfier brothers and Charles. From Paris he wrote detailed accounts of these ascents to Sir Joseph Banks, President of the Royal Society of London. On January 16, 1784, in a letter to his friend Jan Ingenhousz, the physician of Maria Theresa, Franklin wrote:

"It appears, as you observe, to be a discovery of great Importance, and what may possibly give a new turn to human Affairs. Convincing Sovereigns of the Folly of wars may perhaps be one Effect of it; since it will be impracticable for the most potent of them to

(*Concluded on page 338*)



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FOUR ON WAR

(*Concluded from page 336*)

guard his Dominions. Five thousand Balloons, capable of raising two Men each, could not cost more than Five Ships of the Line; and where is the Prince who can afford so to cover his Country with Troops for its Defence, as that Ten Thousand Men descending from the Clouds might not in many places do an infinite deal of mischief, before a Force could be brought together to repel them . . . ?"[3]

From all of this may we not conclude that if most men were as reasonable, as wise, and as humane as the scientists whose views have been presented here, there would be no wars and no tragic necessity to divert our energies from creation to destruction. As it is, we are now fighting a war in which we all rightly feel that, in order to insure any creative activity for the future, it is absolutely necessary for us to destroy those who would willingly destroy us.

The job of fighting it, therefore, must be done with all the power that is within us, the sooner to bring that day nearer when we shall have successfully concluded it. We must endeavor to make sure also that after this war we shall never have to do it again, so that we may be able to increase all those benefits described more than 400 years ago by Leonardo da Vinci as "the chief gift of nature, which is liberty."

[3] *The Writings of Benjamin Franklin*, A. H. Smyth ed., Letter 1473, IX: 155.

THE TREND OF AFFAIRS

(*Continued from page 306*)

It is a misfortune of the greatest magnitude, however, that the world to date has utilized so little the two greatest principles anthropology has to offer: that all cultures should be viewed with respect and objectivity, and that whatever differences do exist among races or classes — and any major ones have yet to be conclusively demonstrated — they are not decisive. "There is no reason to believe," in the words of the late Franz Boas, "that one race is by nature so much more intelligent, endowed with greater will-power, or emotionally more stable than others that the difference would materially influence its culture." The greatest field for applied anthropology is here at home, in easing the shocks of the almost continuous changes going on in our civilization, in combating prejudice, and in buttressing with facts a humane and rational attitude toward our fellow men.

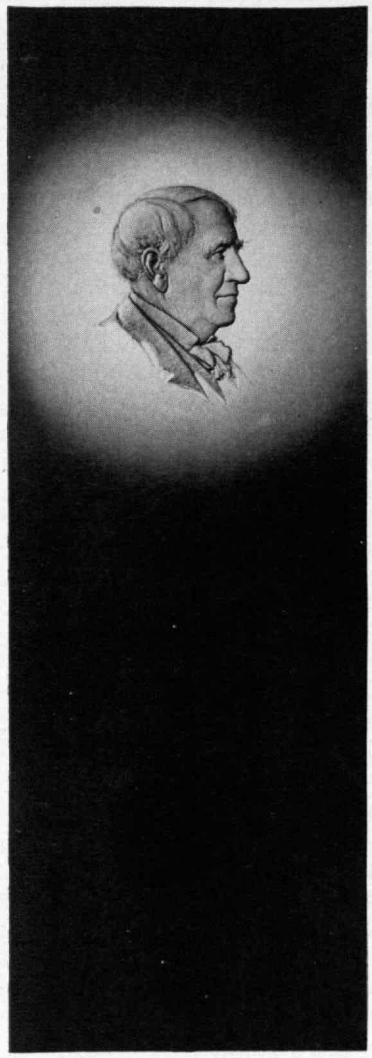
Papermaking

TO write a conventional "review" of Dard Hunter's *Papermaking; the History and Technique of an Ancient Craft* * is an impossibility. For one thing, the concentration of decades of assiduous research fills the book with such riches of fact, story, explanation, and

(*Continued on page 340*)

* New York: Alfred A. Knopf, 1943. xv + 398 + xxiii pages. $4.50.





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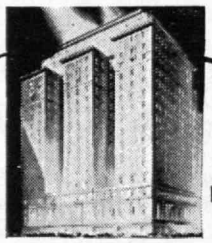
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THE TREND OF AFFAIRS

(*Continued from page 338*)

description as to forbid excerption. For another, the story is told with such craftsman's care and connoisseur's virtuosity that the more than well-satisfied reader, out of appreciation, will decline any undertaking that might dilute them. Hence the fittest approximation to a conventional review is to say that the next best thing to visiting the Dard Hunter Paper Museum at the Institute, for pleasant hours of studying under Dr. Hunter's friendly guidance the manifold treasures it contains, is to read this book.

The sweep of the book in time and space is suggested when one thinks of the multiple uses and the multiple influences — cultural, economic, scientific — of paper, "a thin, felted material formed on flat, porous moulds from macerated vegetable fibre," as Dr. Hunter defines it. From Ts'ai Lun's announcement of his invention A.D. 105 to the present, from the simplest hand fabrication in China to the most highly developed machine production n England at the rate of a quarter-mile of paper over 26 feet wide every 60 seconds, is a considerable scope. Yet the history is a unified one, and not merely because the mold of Ts'ai Lun's day embodied the essential principle upon which today's vast machine depends. The history is unified because of man's many-faceted reliance upon paper, which has extended even to religious ritual in some regions; this presentation of the history is unified not only by Dr. Hunter's surpassing knowledge of the subject but also by his balanced sympathy.

For example, here is a writer in the unique position of having produced books which were his own throughout — he wrote and illustrated them, designed the type, cut the punches and made the type, made the paper, did the printing — who might, therefore, fairly be expected to write primarily as a devotee of crafts as such. His subject, moreover, is one in which the craft motif is in many ways dominant, even in the basic aspects of the mass-production process. But the brief fourteenth chapter of this book is about the most judicious and reasoned evaluation of the comparative claims of the handmade and the machine-made thing which could be asked. The appraisal is of course in terms of paper and the uses of paper; the conclusions and philosophy in which it eventuates are universally applicable.

Within this organic frame, the book presents very many centers of individual interest. The world's first

(*Concluded on page 342*)

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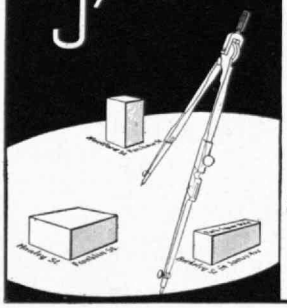
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THE TREND OF AFFAIRS

(*Concluded from page 340*)

text printing on paper, the probable source of the paper on which Thomas Jefferson made his rough draft of the Declaration of Independence, the beginning and artistic development of watermarks, the bearing of watermarks on counterfeiting, the materials and construction of the papermaker's mold, the use of mummy wrappings as raw material in the fabrication of paper in mid-Nineteenth Century America — these are a scant suggestion of the varied historical material which Dr. Hunter recounts. They indicate, however, that this is a book to which the reader will often return.

Ambigu

LEAD-BASE Babbitt-metal alloys are being successfully tested in the search for ways to save tin. One formula, containing but 1 per cent of tin and .5 per cent of copper, has shown bearing properties, fatigue strength, and corrosion resistance equal to those of tin-base babbitt. Another, in which only three-quarters of 1 per cent of tin is used, is reported as showing actual superiority to tin-base bearings in service applications. ¶ Waste paper is being used by British engineers to make expansion joints for the concrete runways of airfields. ¶ Meanwhile experimentation is under way looking to the use of paper as a substitute for jute in the sacks in which the Cuban sugar crop is packed. ¶ Wreckage of German submarines salvaged by the United States Navy along the East Coast has been found covered with an excellent crop of young marine life, including oysters and scallops. Fish farmers take note. ¶ A synthetic rubber is proving superior to natural rubber or other materials for use in the rolls of printing presses. Tests are reported to have shown the synthetic product less subject than the other substances to swelling and distortion from inks and cleaning mixtures, and superior in wearing qualities because it can be compounded to meet specific requirements. ¶ Actual cash military expenditures of the United Nations, plus the slump in national income of countries now under the Axis yoke, are computed by a writer in *Foreign Commerce Weekly* as bringing the merely monetary cost of Adolf Hitler to a sum exceeding $300,000,000,000. ¶ Tough enough to rival steel in many ways, yet weighing only a fifth as much, a plastic material has been developed for use in the forming blocks, dies, and jigs upon which the metal parts of airplanes are fabricated. Base of the new thermo-plastic is ethyl cellulose. The material melts at 200 degrees Centigrade and is poured into molds which will give the cast the shape desired. ¶ Man-made caverns would be wrought in the doleritic rock of the Hudson Palisades to provide enormous air-raid shelters, hangars, and havens for vital manufacturing plants, according to a plan suggested by John C. Evans, chief engineer of the Port of New York Authority, and advocated by George J. Atwell, New York contractor. ¶ Flame cultivation — killing weeds with jets of fire so aimed that they do not injure the crop-plants themselves — is seen as a practical method of supplanting the time-honored hoe.

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THE YEAR BEHIND

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the third year of the M.I.T. Alumni Fund came to a close. It was a year of continued progress. It was, for the Fund, a good year. Some 8,500 Alumni contributed. That was good. They gave over $100,000. That was excellent. In three short years these men had raised their Fund to a point where, in both numbers of contributors and total amount, it was bettered by only four other college funds in the entire country. The alumni body as a whole can well feel proud of this demonstrated willingness to create for the Institute a living endowment.

PRESIDENT COMPTON has said: "I can see ahead the opportunities for a strength and value of this institution as a national asset far beyond anything which has ever before been achieved or perhaps even considered possible." The Alumni are assuring him that they, too, can see that vision, and that they wish to play an active part in making it a reality.

FOR THEIR continued and increasing support the Institute is grateful to its Alumni. Financially their assistance is important — more important now than ever before. But of even greater significance is the spirit which prompts their action, the loyalty and faith thus expressed in concrete form. Technology's Alumni can be certain that the administration finds this assurance of their active support both welcome and inspiring.

—AND THE YEAR AHEAD

WHILE WE can congratulate ourselves on the progress we have made to date, we cannot afford to become complacent. There have been all too many examples of the results of complacency in recent years. We still have far to go to reach our goal of 10,000 men contributing $150,000 annually. That goal was set after much study. Results elsewhere indicate that it is, if anything, on the conservative side. Of our present alumni body of 32,500, our goal in contributors represents 31 per cent. That figure is exceeded in many college funds — at Dartmouth, for example, it was 57 per cent last year; at Amherst, 40 per cent; and at Wellesley, 46 per cent. Our average contribution was $12 — a splendid increase over the first year's $8.30 but still far below that achieved by many other colleges. Princeton's fund averaged $22.60 last year; Northwestern's, $20; Dartmouth's, $16.70; and Worcester Tech's, $15. Over a dozen other funds equaled or bettered our projected goal of a $15 average contribution.

ONE IMPORTANT fact should be constantly borne in mind. The first $5.00 of each contribution go for a subscription to *The Technology Review* and for Alumni Association and Fund expenses — the same amount as the former alumni dues. Only contributions over this amount benefit the Institute. During the Fund's first year, some 53 per cent of all contributions were in the amount of $5.00 exactly — a large number, presumably because of the long-standing dues habit. The past year saw only 36 per cent in this amount — a notable decrease but still a surprisingly large number. It is to be hoped that, as the Institute's needs become apparent to more and more, the number of contributions of $5.00 or less will become smaller and smaller.

AND SO the Fund looks to the year ahead with hope and confidence. The record to date speaks for itself, but there is still much room for improvement. We are sure Technology's Alumni, having in their minds the picture of an institution "far beyond anything which has ever before been achieved or perhaps even considered possible," will respond in a manner which will help in large degree toward making that dream a reality.

TECHNOLOGY MEN IN ACTION

M.I.T. MEN AT WAR

Up to March 8 over 4,000 Institute Alumni, including 14 Admirals and 47 Generals, were recorded as being in the active military or naval services of the United Nations, and ten had already been officially decorated. New additions this month include Brig. Gen. John E. Wood '14, Brig. Gen. Alexander G. Gillespie '15, Brig. Gen. Leslie R. Groves '17, Brig. Gen. James Baylies '21, Brig. Gen. Daniel Noce '21, Brig. Gen. William F. Heavey '22, Brig. Gen. Hermon F. Safford '23, and Brig. Gen. Jonathan L. Holman '25.

Additions and corrections to the listings which have previously appeared, beginning with the issue of November, 1942, will continue to be published in future issues of The Review. As a matter of convenience, promotions and corrections in the rank previously given are grouped under a single heading, "Changes in Rank." The Review Editors are greatly indebted to the many Alumni and other readers who are continuing to co-operate so helpfully in reporting inevitable errors of omission and commission which they note in these listings.

NEW DECORATIONS

1921 Noce, Daniel, *Brig. Gen.*, Distinguished Service Medal — awarded February 17, 1943. Gen. Noce organized the Amphibian Engineers.

1941 Fletcher, Arthur A., Jr., *Capt.* U.S.A., Distinguished Flying Cross — awarded February 16, 1943, for extraordinary achievement in participation in more than 200 hours of operational flights in the Southwest Pacific; Silver Star — awarded for bombing raids on Jap bases in Guadalcanal. Previously awarded the Purple Heart.

COMMENDATIONS

1939 Knoll, Denys W., *Lt. Comdr.*, U.S.N., commended by the Navy Department for his "skill, accuracy and industry" in supplying weather information for the operational forces that landed on the North African coast. Previously commended for service at Cavite in the Philippines during the Japanese attack.

NEW LISTINGS

U.S.A.

1909 Schell, Frank R., *Col.*
1910 Drew, William N., *Maj.*
1913 Font, Manuel, *Col.*
1914 Merrill, Stanley W., *Capt.*
1917 Harrington, Walter, *Capt.*
Williams, Allison, *Lt. Col.*
1919 Blake, Arthur H., *Maj.*
Weiskittel, Francis A., *Capt.*
1921 Morris, Richard H., *Capt.*
Praetz, Edward F., *Maj.*
1922 Bard, Richards J., *Maj.*
1923 Lewis, Bernard, *Maj.*
1925 Dirks, Edward F., *Capt.*
Seabury, Roland T., *Capt.*
1926 Carey, James F., *Maj.*
West, Stanton L., *Capt.*
1927 Wheeler, Kimball L., *1st Lt.*
1928 Thomas, Huguenin, Jr., *Maj.*
Walden, Fred P., *Maj.*
Walsh, Redmond E., Jr., *Lt.*
1931 Cooper, Albert H., *1st Lt.*
Feeney, Martin J., *2nd Lt.*
1932 Ashley, Dwight S., *Lt.*
Baschnagel, Robert, *Capt.*
Coffey, Joseph E., Jr., *Maj.*
Kline, Frederick S., *2nd Lt.*
1933 Cashman, Charles E., Jr.
Green, Morris N., *Pvt.*
Sorentino, Peter A., *Pvt.*
1934 Becker, Robert C., *2nd Lt.*
Jameson, Robert E., *Corp.*
Joy, Henry B., Jr., *Capt.*
Martin, Stuart T., *Capt.*
1935 Reed, Alfred D., *Lt.*
1936 Gray, Charles H., *Corp.*
Grindell, John R., *Capt.*
Noyes, Walter F., Jr., *2nd Lt.*
Shott, Kathleen V., *3rd Officer*
Tower, G. Nelson, Jr., *Pvt.*
1937 Feeley, William J., *Lt.*
Gaston, Dexter W., *1st Lt.*
Kendzur, Max S., *Cadet*
Sherriff, Fred, *Lt.*
Shuttleworth, Herbert L., II, *1st Lt.*
1938 Christenson, Dempster, *2nd Lt.*
Homer, Horace H., *2nd Lt.*
Solomon, Robert D., *2nd Lt.*
Stewart, Norman W., *Pvt.*
1939 Dupree, George W., *Cadet*
Merritt, William A., *Pvt.*
Morrison, George P., *Capt.*
Van Denbury, Carroll H., Jr., *2nd Lt.*
Wexler, Harry, *Capt.*
1940 Crimmins, Francis J., *2nd Lt.*
Jones, Lawrence G., *Lt.*
King, Herbert B., *1st Lt.*
Millard, Robert G., *Lt.*
Miller, Harold N., *2nd Lt.*
Schuerch, Conrad, Jr., *Cadet*
1941 Davis, Walter B., *Corp.*
Hart, William F., Jr., *Capt.*
Heist, John C., *Lt.*
Leonard, Albert C., *Cadet*
Mitchell, A. Hoadley, *1st Lt.*
Morton, Walter E., Jr., *Cadet*
Vandervoort, Norman F., *1st Lt.*
1942 Abernathy, Mabra G., *2nd Lt.*
Ackerman, Philip W., *2nd Lt.*
Anderson, Clarence S., Jr., *Cadet*
Baker, Albert E., Jr.
Bardwell, Allan R., *2nd Lt.*
Beach, Morrison H., *2nd Lt.*
Berestka, Edward S., *2nd Lt.*
Blanchard, Lloyd G., *Lt.*
Bloomingdale, Richard W., *Lt.*
Borchert, John R., *2nd Lt.*
Budge, William W.
Byron, William H., *2nd Lt.*
Chafee, William G., *2nd Lt.*
Chapin, William P. G.
Chase, Robert M., *Lt.*
Clark, Bruce B., *2nd Lt.*
Clarke, John W., *2nd Lt.*
Condron, Thomas P., *2nd Lt.*
Crooker, William I., *Cadet*
DeCoster, James R., *2nd Lt.*
Downing, Albert G., *2nd Lt.*
Downing, James F., *Capt.*
Fay, Richard, *Cadet*
Field, Russell W., Jr., *Lt.*
Frithsen, Arthur R., *2nd Lt.*
Frye, Clifton, *2nd Lt.*
Gagliardi, Carl A., *2nd Lt.*
Gallagher, John F.
Gibson, Theodore W., Jr.
Gleeson, Thomas A.
Grunes, Sampson, *2nd Lt.*
Hall, Donald E., *Lt.*
Hatzenbuhler, George, *2nd Lt.*
Herrmann, William C., *Lt.*
Hibbard, Charles, Jr., *2nd Lt.*
Hinkley, George K., *2nd Lt.*
Hodgdon, Philip W., *2nd Lt.*
Hoffman, Theodore F., *Lt.*
Howell, Albert C., *2nd Lt.*
Hoxie, Howard M., *2nd Lt.*
Jensen, Clayton E., *Lt.*
Jess, Edward O., *Cadet*
Johnson, John C., *2nd Lt.*
Johnson, Myron G., Jr., *2nd Lt.*
Katzenstein, Alan W., *Lt.*
Kimball, Roland B., *2nd Lt.*
Klaus, Harvie B., *Lt.*
Kuchinski, Joseph E., *Lt.*
Lacey, Theodore W., *Lt.*
Lapsis, Alexander J., *Lt.*
Laudati, Peter A., *Lt.*
Legg, Robert H.
Leggett, Richard A., *Lt.*
Link, Milton P., Jr., *2nd Lt.*
Long, Robert F., *Lt.*
Lowell, Norman C., *2nd Lt.*
McCable, John T., *Lt.*
McCarty, Charles D., *2nd Lt.*
McClain, John R., *Pvt.*
McCutcheon, Howard S., *2nd Lt.*
MacDougal, Frank, *Lt.*
McHarg, William C., *2nd Lt.*
McNamee, Ralph A., *Lt.*
Mattioli, Fredinano D., *2nd Lt.*
Miner, Harold C., Jr., *Pvt.*
Morgan, Thomas C. M., *2nd Lt.*
Norris, Robert B., *Lt.*
North, Robert A., *Pvt.*
Norton, Donald A., *2nd Lt.*
Oliver, Albert J., Jr., *Pvt.*
Olsen, Fredrich H.
Olson, George E.
Olson, Roger H., *Lt.*
Pack, Albert B.
Parchman, William J.
Parker, Frank C., *2nd Lt.*
Perry, Robert B., *Lt.*
Plant, Howard L., *2nd Lt.*
Redmond, Ralph J., *Lt.*
Richardson, Alden R.
Richardson, George W., *2nd Lt.*
Roda, Remigo S., Jr., *2nd Lt.*
Root, John D.
Roth, Richard J., *Lt.*
Shackley, Frederic, II.
Skillings, Henry H.
Small, William A., *Cadet*
Smith, Bryan F., *Lt.*
Staknis, Victor H., *2nd Lt.*
Sterrett, James R., *Lt.*
Stewart, Clarence A., *2nd Lt.*
Tippit, Clifford C., *2nd Lt.*
Unson, Miguel R., *Lt.*
Van Arsdale, John C., *Lt.*
Whipple, Richard S., *2nd Lt.*
Williams, Baker B., *Lt.*
Woods, Gilbert N., *2nd Lt.*
Yocum, Dale M.

U.S.N.

1907 Rand, Robert, *Lt. Comdr.*
1908 Fretz, Paul H., *Comdr.*
1921 Libbey, Winfield S., *Lt. Comdr.*
1922 Hilliard, Paul N., *Lt.*
Holmes, Phillip B., *Lt.*
Newhall, Welrose L., *Lt. (j.g.)*
Oatman, David P., *Storekeeper 3/c*
Stewart, Paul R., *Lt. (j.g.)*
1923 Nowell, Joseph C., Jr., *Lt. Comdr.*
1925 Cameron, Finlay G., *Lt.*
Makepeace, Alexander W., *Lt. Comdr.*
1926 Summers, Samuel D., *Lt.*
Vosper, Waynard R., *Lt.*
1927 Burger, Walter D., *Lt. (j.g.)*
1928 Farwell, Joseph S., *Lt.*
Johnson, Ellis A., *Lt. Comdr.*
Keyes, M. Waldo, *Lt. (j.g.)*
Ver Planck, Dennistoun W., *Lt. Comdr.*
1929 Newhouse, Henry L., Jr., *Lt. (j.g.)*
Tallman, Harold M., *Lt.*
1930 Beyer, Robert M., *CPO*
Prescott, Clarence H., *Lt.*
Reisner, Ernest W., *Lt.*
1931 Ness, John M., *Lt. (j.g.)*
1932 Clark, William S., *Ens.*
Fenno, Charles A., Jr., *Lt.*
Follansbee, Robert B., *Lt. (j.g.)*
Kimball, John M., Jr., *Lt. (j.g.)*
Pratt, Russell C., *Lt. (j.g.)*
Tyburski, Leo T., *Lt. (j.g.)*
1933 Cory, George L., *Lt. (j.g.)*
1934 Martin, Francis C., *C/Spec Tech.*
1936 Devine, Warren R., *Lt. (j.g.)*
Halfmann, Edward S., *Ens.*
Kruse, Arnold A., *Lt. (j.g.)*
Mayo, C. Arthur, *Lt. (j.g.)*
Scheel, Henry A., *Lt.*
Smith, Paul E., *Lt. (j.g.)*
1938 Barnby, Donald R. E., *Ens.*
1939 Jamison, Will B., *Ens.*
Walker, William C., *Ens.*
1940 Bunke, Paul K., *Ens.*
Lee, Francis L., *Ens.*
Thompson, Ralph N., *Ens.*
Wheelock, Philip S., *Ens.*
1941 Erlandson, Paul M., *Ens.*
Gordon, James E., *Ens.*
Slaughter, Guy W., *Lt. (j.g.)*
1942 Carlson, Ralph L., *Ens.*
DeMallie, Campbell, *Ens.*
Denney, George D., Jr., *Ens.*
Dudman, John A., *Ens.*
Garrett, Ralph W., Jr., *Ens.*
Haggard, William H., *Ens.*
Haviland, Winthrop A., Jr., *Ens.*
Ingram, Robert S., *Ens.*
Jones, J. Halsey, *Ens.*
Kline, William E., *Ens.*
Knapp, William J., *Ens.*
McNeal, Daniel R., Jr.
Morser, Calvin S., *Ens.*
Stumpp, Vincent J., *Ens.*
Wingert, Meredith, *Ens.*

U.S.C.G.

1936 Waram, J. Thomas C., *Ens.*

U.S.M.C.

1924 Bartlett, Ralph W., Jr., *Pvt.*
1931 Brown, Jack H., *Maj.*
1934 Malone, Kevin, *1st Lt.*
1940 Artz, John C., *2nd Lt.*
1942 Lawrance, Charles H., *Pvt. 1/c*
Vaccaro, Ralph F.

Canadian Army

1928 Smitheringale, William V., *Lt.*
1929 Bolton, Richard, *Lt.*
1939 Guthrie, Richard H., *F/O*

CHANGES IN RANK

U.S.A.

1913 Nickerson, Harold L., *Lt. Col.* to *Col.*
1914 Wood, John E., *Col.* to *Brig. Gen.*
1915 Gillespie, Alexander G., *Col.* to *Brig. Gen.*
Tobey, James A., *Lt. Col.* to *Col.*
1917 Clayton, Lawrence L., *Lt. Col.* to *Col.*
Groves, Leslie R., *Col.* to *Brig. Gen.*
1919 Strobridge, James G., *Maj.* to *Lt. Col.*
1921 Baylies, James E., *Col.* to *Brig. Gen.*
Hutchings, Henry I., Jr., *Maj.* to *Col.*
Loper, Herbert B., *Maj.* to *Col.*
Moore, Kenneth M., *Maj.* to *Col.*
Noce, Daniel, *Maj.* to *Brig. Gen.*
Pohl, Herman H., *Lt. Col.* to *Col.*

Rhodes, Lester F., *Capt.* to *Col.*
Robb, Holland L., *Lt. Col.* to *Col.*
Stamps, T. Dodson, *Lt. Col.* to *Col.*
Troland, Girard B., *Lt. Col.* to *Col.*

1922 Bainbridge, William W., *Lt.* to *Capt.*
Fisk, H. Howland, *Capt.* to *Maj.*
Heavey, William F., *Lt. Col.* to *Brig. Gen.*
Irvine, Elroy S. J., *Lt. Col.* to *Col.*
Styer, Wilhelm D., *Brig. Gen.* to *Maj. Gen.*

1923 Kane, Nicholas, *Capt.* to *Maj.*
Meeks, Sterner S., *Lt. Col.* to *Col.*
Perkins, Oscar L., *Capt.* to *Maj.*
Safford, Hermon F., *Maj.* to *Brig. Gen.*
Shaler, Harrison, *Maj.* to *Col.*

1924 Brimberg, Isaac, *1st Lt.* to *Capt.*
Gegan, John B., *Maj.* to *Lt. Col.*

1925 Broberg, Waldemar S., *Maj.* to *Col.*
Doucette, Myron E., *Maj.* to *Lt. Col.*
Gow, Ralph F., *Maj.* to *Lt. Col.*
Holman, Jonathan L., *Col.* to *Brig. Gen.*

1926 Eddy, Emerson W., *Lt.* to *Capt.*

1927 Anderson, Andrew, Jr., *Lt.* to *Capt.*

1928 Abbott, Argyle C., *Lt.* to *Capt.*
Johnson, John W., *Lt.* to *Capt.*
Weinberg, Hyman, *Maj.* to *Lt. Col.*
Winter, Norman L., *Maj.* to *Lt. Col.*

1929 Cathcart, William T., *Lt.* to *Maj.*
Schumacher, George H., *Maj.* to *Col.*

1930 Collins, Robert B., *Lt.* to *Maj.*
L'Esperance, Stanley G., *Lt.* to *Capt.*
Schulgen, George F., *Capt.* to *Col.*
Spahr, William H., *Lt.* to *Capt.*

1931 Dodson, John L., *Maj.* to *Lt. Col.*
Heinlein, Rex I., Jr., *Lt.* to *Maj.*
Higgins, John N., *Lt.* to *Capt.*
McBrien, Joseph, *Lt.* to *Capt.*
Machen, Claude F., *Lt.* to *Capt.*
Smith, Robert McK., *Lt. Col.* to *Col.*

1932 Loeb, Robert M., *Lt.* to *Capt.*
Neilon, Daniel F., *Capt.* to *Maj.*
Vassalotti, Louis J., *Lt.* to *Capt.*

1933 Kidde, Gustave E., *Maj.* to *Lt. Col.*
Ladd, Frederick A., *Pvt.* to *1st Lt.*

1934 Bernstein, M. Jack, *Capt.* to *Maj.*
Nashner, Sydney, *Lt.* to *Capt.*
Rettberg, Walter A., *Pvt.* to *Corp.*
Roulston, Robert K., *Capt.* to *Maj.*

1935 Allen, Charles K., *Maj.* to *Lt. Col.*
Dangel, Phoenix N., *Lt.* to *Maj.*
Grazi, Sidney, *Lt.* to *Capt.*
Kiker, John E., Jr., *Lt.* to *Capt.*
Lauder, William B., *Lt.* to *Capt.*
O'Brien, Frederick F., *Capt.* to *Maj.*
Williams, Robert E., *Capt.* to *Maj.*

1936 McMahon, Gerald S., *Lt.* to *Capt.*
Meeks, John A., *Capt.* to *Maj.*
Price, Charles F. B., Jr., *Lt.* to *Maj.*
Snow, Edson B., *Lt.* to *Capt.*
Thomas, Gordon C., *Lt.* to *Capt.*
Ulans, Roman I., *Capt.* to *Maj.*

1937 Benson, Robert E., *Lt.* to *Capt.*
Fine, Aleck, *Cadet* to *2nd Lt.*
Hamilton, Clark H., *Pvt.* to *Lt.*
Kowalski, Frank, Jr., *Capt.* to *Lt. Col.*
Post, Ezriel, *Cadet* to *Lt.*
Rodenhauser, Jermain F., *Maj.* to *Lt. Col.*
Vahlberg, Robert W., *Lt.* to *Capt.*

1938 Hadley, Robert E., *Pvt.* to *2nd Lt.*
Johnson, Robert L., *Lt.* to *Capt.*
McClure, W. Carter, *Lt.* to *Capt.*

1939 Castleman, Louis S., *Lt.* to *Capt.*
Cutler, Monarch L., *Lt.* to *Capt.*
Emerson, Bascom C., *Lt.* to *Capt.*
Herlihy, John I., *Cadet* to *1st Lt.*
Leghorn, Richard S., *Lt.* to *Capt.*
Madsen, Kenneth E., *Capt.* to *Maj.*
Osmundson, Verne N., *Capt.* to *Maj.*
Perkins, Lawrence, *Lt.* to *Capt.*
Thomas, Walter G., *Lt.* to *Capt.*

1940 Jackson, Melvin L., *Capt.* to *Maj.*
Kirsten, Elwyn N., *Capt.* to *Maj.*
Luckett, James S., *Capt.* to *Lt. Col.*
Mathews, Elmo S., *Maj.* to *Lt. Col.*
Menoher, William, *Lt.* to *Lt. Col.*
Morrison, John A., *Lt.* to *Maj.*
Mowrer, David L., Jr., *Lt.* to *Capt.*
Parent, Robert A., *Lt.* to *Capt.*
Stoddard, Philip A., *Lt.* to *Capt.*
Swift, Dean E., *Maj.* to *Lt. Col.*

1941 Alpert, Leo, *Lt.* to *Capt.*
Beaupre, Edward A., *Lt.* to *Capt.*
Cheek, James H., Jr., *Lt.* to *Capt.*
Cook, Arthur C., *Lt.* to *Capt.*
Liener, Irvin E., *Pvt.* to *Sgt.*
Murdock John B., *Lt.* to *Capt.*
Rose, Grover D., Jr., *Corp.* to *Lt.*
Sumner, Edwin V., *Lt.* to *Capt.*
VanDongen, Dirk, *Lt.* to *Capt.*

1942 Crowley, Thomas T., *2nd Lt.* to *1st Lt.*

U.S.N.

1909 Hibbard, Charles, *Lt. Comdr.* to *Comdr.*

1920 Kell, Claude O., *Lt. Comdr.* to *Capt.*

1922 Allen, J. Ross, *Lt. Comdr.* to *Capt.*

1923 Cowdrey, Roy T., *Comdr.* to *Capt.*
Daggett, Roswell B., *Lt.* to *Comdr.*
Fleming, Robert W., *Comdr.* to *Capt.*
Williams, Charles D., Jr., *Lt.* to *Comdr.*

1925 Kiernan, Joseph M., *Comdr.* to *Capt.*

1929 Champion, Carleton C., Jr., *Lt. Comdr.* to *Capt.*

1931 Ekstrom, Clarence E., *Lt. Comdr.* to *Comdr.*

1936 Bartol, John A., *Ens.* to *Lt.*

1938 Gordon, Robert S., *Ens.* to *Lt. (j.g.)*

1939 Fairbrother, Horace W., Jr., *Ens.* to *Lt. (j.g.)*

1940 Hess, Robert S., *Ens.* to *Lt. (j.g.)*
Lundgren, Robert W., *Mid.* to *Lt.*

1941 Brown, Bertram M., *Ens.* to *Lt. (j.g.)*
Rodin, Harry, *Ens.* to *Lt. (j.g.)*
Skowronek, Lester J., *Ens.* to *Lt. (j.g.)*
Wulff, John T., *Lt.* to *Lt. Comdr.*

1942 Brown, William W., *Lt.* to *Lt. Comdr.*

U.S.C.G.

1941 Chaffee, Hubert R., *Lt.* to *Lt. Comdr.*

1942 Davis, Harry E., Jr., *Lt.* to *Lt. Comdr.*

U.S.M.C.

1933 Manley, William G., *Maj.* to *Col.*

1941 Barnard, Richard I., *Pvt.* to *Corp.*

RANK NOT PREVIOUSLY PUBLISHED

1908 Ferris, Raymond W., *Lt.*, U.S.N.

1925 Meaker, O. Phelps, *2nd Lt.*, U.S.A.

1936 Austin, Charles L., Jr., *2nd Lt.*, U.S.A.

1940 Brown, Richard C., *Ens.*, U.S N.

1942 Dodson, Charles O., Jr., *Ens.*, U.S.N.
Lindsey, Roger H., *1st Lt.* U.S.A.

CASUALTIES

1938 ★Dionne, Arthur L., *Ens.*, U.S.N.; Solomon Islands, November 30, 1942

1940 ‡Farrell, Walter H., *Lt.*, U.S.A.; Philippines (Previously reported "Missing in Action.")

1940 †Fodale, Charles B., *Lt. (j.g.)* U.S.N.; U.S.S. *Juneau*

1942 †McNall, Burt C., *Sgt.*, R.C.A.F.

★ Killed in action
† Missing in action
‡ Reported captured

Honor

Ensign Arthur L. Dionne, U.S.N.R., of the Class of 1938 who was killed in the Battle of the Solomon Islands on November 30, 1942, was honored posthumously by the Navy through the naming of a new-type destroyer escort ship after him at the Boston Navy Yard on March 10, 1943. Sponsor of the U.S.S. *Dionne* was Mrs. Lee A. Dionne, mother of Ensign Dionne.

ALUMNI AND OFFICERS IN THE NEWS

Forward the Faculty

¶ MARTIN J. BUERGER '24, Associate Professor of Mineralogy and Crystallography, who has been elected president of the American Society for X-Ray and Electron Diffraction.

¶ ROBERT G. CALDWELL, Dean of Humanities, who presided at the luncheon session of a conference on inter-American understanding sponsored by the Pan American Society of Massachusetts on March 3.

¶ KARL T. COMPTON, President, who received the doctorate of laws from Tufts College on January 26.

¶ GEORGE DE SANTILLANA, Assistant Professor of the History of Science, who has written an article, "Italy Listening," in the March *Atlantic*.

¶ KARL W. DEUTSCH, instructor in history, who addressed an all-Slav unity festival in Boston on February 21.

¶ HAROLD E. EDGERTON '27, Associate Professor of Electrical Measurements, who spoke on high-speed photography before the Industrial Research Institute in January.

¶ F. LEROY FOSTER '25, assistant to the Director of the Division of Industrial Coöperation, who has been appointed to the research laboratories industry advisory committee of the War Production Board.

¶ MURRAY P. HORWOOD '16, Professor of Bacteriology and Municipal Sanitation, who is directing a course on restaurant sanitation sponsored by the Massachusetts Restaurant Association.

¶ WALTER R. MACCORNACK '03, Dean of Architecture, who addressed the Boston League of Women Voters' conference, "Streamlining Our City Government," on February 26.

¶ FRANCIS O. SCHMITT, Head of the Department of Biology and Biological Engineering, who spoke on "Form and Function in Biological Fibers" at the Sigma Xi day observance at the University of Rochester on February 22.

¶ WALTER C. VOSS '32, Head of the Department of Building Engineering and Construction, who on March 4 addressed the Boston chapter of the Producers Council on the need for postwar industrial planning now.

¶ GORDON B. WILKES '11, Professor of Heat Engineering, who was author of a paper on heat-transmission values for loose-fill insulators presented by LUCIEN R. VIANEY, instructor in Mechanical Engineering, before the American Society of Heating and Ventilating Engineers in January.

His Honor, the Alumnus

¶ R. E. BAKENHUS '96, new President of the American Institute of Consulting Engineers.

¶ W. WATTERS PAGON '07, winner of the James Laurie prize of the American Society of Civil Engineers in January.

¶ JOSEPH W. BARKER '16, recipient of the doctorate of engineering from Case School of Applied Science on December 20.

¶ ISIDOR SLOTNIK '19, new President of the Associated General Contractors of Massachusetts.

¶ MAC SHORT '26, recently elected President of the Society of Automotive Engineers.

¶ A. LEWIS MACCLAIN '27, winner of the Octave Chanute award on January 26 for "notable contribution to the aeronautical sciences."

DEATHS

* *Mentioned in class notes.*

¶ DANIEL W. WILLARD '70, November 29.

¶ HENRY H. KENDALL '76, February 28.

¶ CHARLES T. MAIN '76, March 6. (See the Institute Gazette.)

¶ DAVID BAKER '85, December 12.*

¶ GILES TAINTOR '87, January 27.*

¶ FRED A. THOMAS '87, May 2.*

¶ FRANKLIN HENSHAW '88, December 6.

¶ GARY N. CALKINS '90, January 4.*

¶ PHILIP M. BURBANK '92, January 10.

¶ DANIEL T. V. HUNTOON '92, January 15.

¶ JAMES A. EMERY '93, February 23.*

¶ FLORENCE M. LAIGHTON '93, January 15.*

¶ LOUIS LEVI '93, December 16, 1941.*

¶ SAMUEL P. WALDRON '93, February 6.*

¶ ELIZABETH V. GAINES '94, April 26, 1942.*

¶ ISAAC B. HAZELTON '94, January 27.*

¶ LEONARD H. GOODHUE '96, September 11.*

¶ J. ALBERT MCKAY '96, January 15, 1942.*

¶ CHARLES K. B. NEVIN '96, January 10.

¶ THOMAS C. ATWOOD '97, February 2.

¶ HARRINGTON BARKER '98, December 23.*

¶ FRANCIS P. BERGEN '98, November 22.*

¶ JOHN F. CASHMAN '98, December 4, 1941.*

¶ HARRY A. CURTIS '98, January 25.

¶ ALBERT W. HITCHCOCK '98, July 25.*

¶ EDWIN R. KING '98, October 24.*

¶ BENJAMIN F. W. RUSSELL '98, February 11.*

¶ EDWIN E. WIGHTMAN '98, January 28, 1942.*

¶ SUSAN SIGOURNEY HARRIMAN '99, October 25.

¶ HARRY P. PARROCK '01, January 27.

¶ HAROLD O. BOSWORTH '02, January 31.*

¶ LOUIS E. VAUGHAN '02, February 2.*

¶ CAROLINE DRESSER WITHERLE '02, December 8.*

¶ SHELDON K. BAKER '03, July 12.

¶ HENRY A. PEMBERTON '03, January 19.

¶ HENRY C. SCHAEFER '04, November 11.

¶ THOMAS M. GUNN '05, January 18.

¶ NATHANIEL A. RICHARDS '05, January 19.

¶ HENRY S. SPAULDING '05, May 8.

¶ RALPH C. LAWRENCE '06, January 14.*

¶ CARL G. KOPPITZ '09, January 6.*

¶ JAMES B. PIERCE, JR., '11, January 18.*

¶ ROBERT A. D. MACKAY '18, January 4.

¶ DAVID P. MINARD '19, April 6, 1942.*

¶ OSCAR F. NEITZKE '21, February 15.*

¶ EDMUND T. ALLEN '23, February 18.* Of him, *Time* for March 1 carried this tribute: ". . . The greatest test pilot aviation had ever had. . . . Probably no other man in aviation could be so hardly spared."

¶ DONALD E. CUMMINGS '23, December 15.

¶ ORRIN W. PINEO '29, September 5.

¶ EDWARD W. MORRIS '33, February 13.

¶ DAVIS C. MCINTOSH '35, January 2.

NEWS FROM THE CLUBS AND CLASSES

CLUB NOTES

Detroit Technology Association

The following officers have been elected for 1943: John E. Longyear '26, President; Allyne C. Litchfield '17, Vice-president and Honorary Secretary; David M. Sutter '26, Vice-president and program chairman; Douglas B. Martin '25, Secretary; and Thomas F. Morrow '35, Treasurer.

At our meeting on February 23, B. Edwin Hutchinson '09, former President of the Alumni Association, reported on his trip to Boston in connection with the Alumni Banquet on January 30. We were most fortunate in also having as our guest Erwin H. Schell '12, Head of the Institute's Department of Business and Engineering Administration. Professor Schell spoke extemporaneously on the present and future possibilities of Technology.

The following men were present at this meeting: Louis E. Williams '01, B. Edwin Hutchinson '09, Minot S. Dennett '11, Erwin H. Schell '12, Charles L. Tuller '12, Thomas J. Lough '13, Frank N. Phelps '13, Philip C. Baker '16, Carl T. Guething '16, Tredick K. Hine '16, John T. Cronin '17, Charles T. Ellis '17, Milton W. Pettibone '17, Charles C. Long '18, Everett F. Doten '19, Witold W. Kosicki '20, William W. Harris '22, Hua Kaw '22, Frederic G. Garrison '24, Robert Velz '24, Franklin Fricker '25, Douglas B. Martin '25, Maurice L. Ash, Jr., '26, John E. Longyear '26, Francis H. Rutherford '28, Abraham Woolf '28, Richard J. Coveney '29, Joseph B. Shea '31, A. Cameron Crosman '32, W. Stewart Roberts '32, Edward L. Asch '34, Thomas F. Morrow '35, David S. Geer '38, Richard Muther '38, Antonio Arias, Jr., '39, Forrest T. Ellis '39, Paul T. Nims '40, James F. McClelland, Jr., '42, Robert W. Seavey '42, J. W. Alexander, and Craig Keith. — Douglas B. Martin '25, *Secretary*, 6501 Harper Avenue, Detroit, Mich.

Technology Club of Central Pennsylvania

In view of the curtailed transportation facilities and the little time our members now have available for social activities, it has been voted to suspend meetings of the Club for the duration. At the time a canvass was made regarding this action, several of the members made some worthy suggestions as to various ways our club interest can be kept alive until we can again get together for what might be called a "victory meeting."

In each of the four centers — Lebanon, York, Harrisburg, and Lancaster — local group meetings should be arranged as frequently as possible and reports sent to the Secretary for this column.

A suggestion was made that brief news items on the activities of the members should be sent to the Secretary for use in this column, so that we all can keep posted on details we used to talk about when we got together. We hope this may become some kind of a substitute for club meetings. Your Secretary, therefore, urges, and pleads if necessary, that all members co-operate. When we are able to get the Club together again, we shall be able to renew more readily the fellowship we have enjoyed in the past.

We are now arranging to post bulletins in this area where M.I.T. service men may be temporarily located, inviting them to contact any club member or members indicated on a list furnished with the bulletin. Such members will be happy to extend hospitality to interested fellow Alumni. This is one way our Club can be of service to those who are away from home. If you can suggest other ways of being of service, send along your ideas when you write your personal news briefs for this column. — Gardiner C. Wilson '15, *Secretary*, Armstrong Cork Company, Engineering Department, Lancaster, Pa.

M.I.T. Club of Northern New Jersey

The Club held its fall smoker at the Newark Athletic Club on November 18. Over 160 members were present. Albert A. Schaefer, Professor of Law and Government in Course XV at the Institute, was the distinguished guest of the evening. For all too short a period he told amusing anecdotes in a way that only Professor Schaefer can tell them. His wide experience as a trial lawyer and as a student of human nature provided the background for stories without equal. The stories about how he extricated offending students from the grasp of the law brought back memories to many who had had personal experiences along that line.

Mickey MacDougal, internationally famous card detective, exposed many tricks of the professional gambler under the heading, "Gamblers Don't Gamble." He demonstrated many manipulations used by professional gamblers to take in the suckers. Much of his exposé was done with such sleight of hand that his audience was left far behind. Only his slow-motion moves were comprehended.

The meeting was enjoyed by all. Doughnuts, cider, and beer were served during the social period. Warren H. Dolben '30, our President, announced that plans are being formulated for the annual banquet, tentatively set for April 22. Details will be mailed to members as usual. — Newton S. Foster '28, *Secretary*, 73 Daniel Avenue, Rutherford, N.J. John M. Keck '23, *Membership Secretary*, 207 Bloomfield Avenue, Bloomfield, N.J.

Technology Club of New York

The third annual luncheon of the M.I.T. alumni group in the Technical Association of the Pulp and Paper Industry was held on Tuesday, February 16. John L. Parsons '17, Hammermill Paper Company, Erie, Pa., was chairman. He introduced Charles E Locke '96, Alumni Secretary, who gave an interesting picture of M.I.T. under war conditions. Approximately 50 were present at the luncheon, including three guests from Sweden. Saxton W. Fletcher '18, J. O. Ross Engineering Corporation, New York City, was elected chairman of the group for the coming year.

Club activity is running at an all-time high. Resident as well as nonresident members are using the club facilities more frequently for their overnight stays in the city. The attractions of good food, comfortable accommodations, and friendly club atmosphere are all the more appreciated in view of the premium on commercial accommodations in the city.

All of the club members were deeply affected by the death of our former Assistant Treasurer, Robert M. Emery '34. Bob was killed in action on November 8 during the African assault. — The sudden passing of Isaac B. Hazelton '94 on January 27 was also a great shock to us all. Ike was one of the earliest members of the Club, and down through the years he was faithful in his attendance at all club affairs. He was held in deep affection by the New York alumni group. — William D. Neuberg '17, *Secretary*, 24 East 39th Street, New York, N.Y. William L. Keplinger '24, *Publicity Committee*, care of Johns Manville, 22 East 40th Street, New York, N.Y.

Technology Club of Philadelphia

The Club held a dinner meeting at 6:30 P.M. on February 16 at the University Club, Philadelphia, with 75 members present. The guest speaker was Edward L. Moreland '07, Dean of Engineering at the Institute, who is now actively associated with the National Defense Research Committee of the Office of Scientific Research and Development. He outlined the important part M.I.T. is taking in the war effort, not only in contributing the services of the staff and equipment but also in the intensive training of Army and Navy personnel.

High-speed motion pictures taken by Harold E. Edgerton '27, Associate Professor of Electrical Measurements at M.I.T., were exhibited. Included in the subjects shown were smoke passing through the blades of a fan, the bursting of a soap bubble, a cat turning over when dropped, a house fly in flight, metal cutting in a shaper, and the breaking of cups.

The annual election of officers for the coming year was held. The following were elected: Edward J. Healy '23, President; Harry L. Bowman '14, First Vice-president; Herbert W. Anderson '15, Second Vice-president; Francis J. Chesterman '05, Third Vice-president; George T. Logan '29, Secretary; and Granger D. Schrader '30, Treasurer.

The Treasurer's report showed 175 paid members and a slight increase in cash balance over the previous year. A club contribution of $75 to the Alumni Scholarship Fund was approved.

Ed Healy, our new President, has successively filled the three vice-presidential chairs, and his election was well merited. In heading the membership and attendance committee, he has been responsible for the fine turnouts at the meetings for several seasons past.

Our retiring President, Phil Alden '22, is to be congratulated on the able manner in which he has guided the club affairs for his two terms of office, during which there was an all-time high in enthusiasm and interest. — GEORGE T. LOGAN '29, *Secretary*, 1000 Chestnut Street, Philadelphia, Pa. HENRY F. DALEY '15, *Review Secretary*, B. F. Sturtevant Company, Cresmont and Haddon Avenues, Camden, N.J.

Washington Society of the M.I.T.

The Society held its January meeting at Barker Hall, Y.W.C.A., 17th and K streets, Northwest, on Thursday, January 28, at 5:30 P.M. Our meeting date has been changed to the fourth Thursday of the month. President Mert Emerson '04 introduced our guest speaker, Dean Elmer L. Kayser, Ph.D., author and professor of history at George Washington University, as a man of many talents.

Dean Kayser, speaking of "France and the World Situation," stated that we are just getting over the honeymoon stage in our relations with some of the other leading powers. The honeymoon usually wears off and the nice words do not always continue, but this need not necessarily lead to divorce. We are hearing of items that may lead to dissension, such as the failure of Stalin and Chiang Kai-shek to attend the Casablanca session with Roosevelt and Churchill. For instance, we hear people say, "Well, we are pulling the British chestnuts out of the fire again." Or Russia says: "The river of materials is in reality a slowly trickling brook."

As to France, Dean Kayser said: "There are all kinds of republics with great differences. We are accustomed to thinking of them as all more or less alike. In France, parties do not run from Casablanca to Moscow, but from heaven to hell and from Rightist to extreme Leftist. And I mean extreme!" Politics is a major obsession in France. It thoroughly permeates the army, and Dean Kayser feels that it always will. While we did a wonderful military job in North Africa, he feels we fell down miserably on the political angle which was bound to crop up. It was most embarrassing to have Darlan killed while under our protection and for us to be in a position to profit thereby. Then again, it was most embarrassing to find that as soon as Giraud took over, Peyrouton was called back from the Argentine. The only outstanding thing in Peyrouton's favor was the signing of an order to arrest Laval. He was an extreme Rightist, cordially hated by many in Morocco. "Much of the difficulty," said Dean Kayser, "has helped to drive a wedge between Great Britain and the United States and has held up our drive in North Africa at a time when we should be doing more really to help Russia by action, if we are to be there at the peace table. We must be in there doing our part *now* if we want to be on top for the war that begins after the war."

Dean Kayser hopes we will resolve not to recognize *any* French government, that we will get away from implications of restoring the *status quo* which seem to be in the Atlantic Charter, and that we will make a practice of not recognizing any administration which can later force our hand against our will. His thought is that without committing ourselves as to any course of action except beating the Axis, we should ask both De Gaulle and Giraud to report to the high command, to get to work, and to behave.

In spite of the terribly stormy weather, with sleet and snow all over Washington, we had a good turnout, with 60 attending the talk and the ensuing dinner. — M. WALDO KEYES '28, *Executive Secretary*, 6514 Brennon Lane, Chevy Chase, Md. WILLIAM K. MACMAHON '22, *Review Secretary*, Rosslyn Gas Company, 3240 Wilson Boulevard, Arlington, Va.

CLASS NOTES

1868

One very pleasing feature of the Alumni Banquet on January 30 was the observance of the 75th anniversary of the Class of 1868, which was the first class to be graduated from the Institute. Official greetings were sent by Francis A. Barrett '24, President of the Alumni Association, to the two known surviving members of this Class, Robert H. Richards and Daniel M. Wheeler. Professor Richards is spending the winter at his old home in Jamaica Plain and goes out for an automobile ride whenever the weather is favorable. He passed his 98th birthday last August. Dan Wheeler, who is in his 97th year, is still active, going every day to his job as chief engineer of the Berkshire Street Railway Company in Pittsfield, Mass. The following interesting letter was written by Wheeler to Charles M. Spofford '93 at commencement time:

"As a member of the Class of 1868, I am now looking back upon the 75 years that have elapsed since our graduation. Seventy-five years seem long to look forward to but not so long in retrospect. I have every reason to be thankful for continued life and health and for what little I may have been permitted to accomplish during a long and eventful life.

"What a change has taken place in M.I.T. during these 75 years! In 1868 the Institute occupied only one building on Boylston Street, the Rogers Building. The Back Bay had been filled in, but there was no other building beyond Rogers. We appreciated the beautiful building in those olden days, but how much greater is the Institute now with its magnificent building and superb equipment on the bank of the Charles River! But notwithstanding all the improvements and the rapid growth of Technology in all these years, I must confess that it was with a feeling of sadness that I attended the 'Farewell-to-Rogers' exercises not long ago and descended the historic steps of that building for the last time.

"How many people know that in 1868, just after the Civil War, M.I.T. was a semimilitary school with uniforms for its students and a military drill every Saturday? I remember that I once held the *important* rank of corporal in the corps and that we formed a part of the military escort at the funeral of John A. Andrew, our war governor.

"I rejoice in the enviable record that Technology has made in the cause of education. It has brought honor not only to itself but to the state and nation as well. As one of the two known surviving members of the Class of 1868, I desire to offer my congratulations upon past achievements to all connected with the Institute, from its honored President to the Alumni, students, and staff, and to predict for Technology a still more brilliant future in the years to come."

1885

Notice has just been received of the death of David Baker in Wellfleet, Mass., on December 12. Baker was born in East Boston on May 31, 1861. He was graduated from M.I.T. with our Class as a mining engineer, and on July 1, 1885, he entered the employ of the Pennsylvania Steel Company. He was with this company and later with its branch, the Maryland Steel Company, for nearly 15 years. Later he was superintendent of the blast furnaces of the Illinois Steel Company in South Chicago.

In 1901, Baker became superintendent and then general manager of the Dominion Iron and Steel Works on Cape Breton. This company was then owned by Americans but was later sold to Canadians, who installed Canadian managers.

In 1904, Baker established an office in Philadelphia as a consulting engineer. Among his outstanding professional achievements was the construction in 1913–1914 of several blast furnaces and steel mills for the Broken Hill Proprietary Company, Ltd., in Australia. He eventually became general manager of the company and remained with them until 1925, when he was obliged to relinquish active work because of ill-health.

On the 25th anniversary of the Broken Hill Proprietary Company, its magazine, the *B. H. P. Review*, published an article about Baker, from which we quoted in The Review of November, 1940. One paragraph of the article read as follows:

1885 Continued

"Mr. Baker brought to the position [manager] a wealth of knowledge, rare energy, and breadth of vision tinged with genius. During his regime as manager, he laid the material foundations and the far-sighted policies from which has developed the Newcastle steel works . . ."

Baker continued as consulting engineer of this company after his return to Philadelphia, but finally in 1927 he was obliged to give up all work. He and Mrs. Baker spent their summers in Wellfleet and their winters in the South, where Mrs. Baker died quite suddenly a few years ago. After her death, Baker spent several winters in his son's home in Rosemont, Pa., and his summers in Wellfleet. He finally made the latter his permanent year-round home.

As we look back at Baker's Technology days, we think of him as most genial and companionable — a friend of all. He was active on the tug-of-war and football teams.

The Class held its 50th reunion at Wellfleet, and Dave was actively interested in seeing that we all had a good time. He succeeded admirably! — ARTHUR K. HUNT, *Secretary*, 145 Longwood Avenue, Brookline, Mass.

1887

Members of the Class were greatly shocked to learn of the sudden death of our beloved President, Giles Taintor, at the Fall River Hospital on January 27. Notice of this was at once sent out to the members of the Class by the Secretary. As the latter had been suffering from an attack of virus germ for several weeks and at the time of the preparation of these notes was in a state of early convalescence, he was unable to write in greater detail at that time, but he hopes to be able to do so for the next issue of The Review. — Word has also been received of the death of our classmate Fred A. Thomas, which occurred on May 2 at his home at Pawtucket, R. I., but details are lacking.

Gelett Burgess announces his change of address from the Hotel Imperial, where he has resided for the past few years, to 872 Madison Avenue, New York City. — At the Alumni Dinner on January 30 at the Statler the class representatives were Cole, Carter, Tripp, and Very, who shared the table with Bridges, Brown, Conner, and Ellis of the Class of '88, and Bosworth '89, making a most congenial party. Sad to relate, Fred Kendall, who had made all arrangements to attend and was looking forward in fond anticipation to an evening's enjoyment, had his plans rudely knocked in the head by his physician, who ordered him to the Newton Hospital instead of to the Statler. Fred's condition was not considered serious and, according to last accounts received by the Secretary, he was improving.

Blake writes from his St. Petersburg home: "I was sorry to learn through your post card of the death of Giles Taintor. I do not recall ever attending a gathering of our Class when Giles was not present. He will be greatly missed. I think Mrs. Blake and I are here for the duration, and then some. I hope you have ample fuel to keep you warm this winter. It is very mild here."

A letter from Frank Shepard is always welcome and his latest, received only a few days ago, will be appreciated by all: "Your card announcing the sudden death of Giles Taintor was received with great sorrow, as Giles was one of my most intimate associates and good friends during Technology days. I have always admired his honesty and loyal friendship, and know how greatly he will be missed in the plans of the class organization and what a loss it will mean to every member of '87. So often, I deeply regret that I have not found it possible to attend the meetings and reunions of our Class, but the memories of friendships enjoyed and traditions established during our student days and followed in business careers by the members of our Class will always be an inspiration to me throughout life. Please express my earnest sympathy to the members of Giles's family, and may they be comforted in the thought that his sterling character and high ideals will be an example for all of us to follow." — NATHANIEL T. VERY, *Secretary*, 15 Dearborn Street, Salem, Mass.

1888

At the Alumni Banquet at the Hotel Statler on January 30, the following were present: Bridges, Brown, Conner, and Ellis. The last-named was supposed to pinch hit for the absent Secretary, but he struck out, whereupon Joe DiMaggio in the person of Very, Secretary of '87, stepped up to the plate and homered, bringing in the four mentioned above. That was good team play. (In other words, Ellis made no report to me, but Very did.) Alumni Hosts for the Class of '43 from our Class were Webster, Conner, Ellis, and Chandler.

Edward M. Smith, deacon of the Congregational church in Hampton, N.H., planned to celebrate his 77th birthday by chopping down a few trees for next winter's fuel supply. He wrote: "Perhaps by next year we shall all have to depend on wood. I have already put in a few hours chopping trees, assisted by my son-in-law, who is pastor of the Congregational church in Hampton. This church was organized in 1638 and is, I think, the oldest in the state. Our church, an offshoot of the Hampton church, was organized in 1738, and the first two deacons were both my ancestors."

Our class poet, John G. Faxon of Fitchburg, Mass., says: "I sold my great big house last fall, and we are living downtown in a charming flat, all set with such easy and simpler living. I sold my car and now danger driving on my old hill is a thing of the past. I am not wholly over the effects of my severe case of shingles of early last year, but I am getting better all the time."

Miss Elizabeth Sjöström, daughter of Mr. and Mrs. Ivar L. Sjöström of Andover, Mass., was married to G. H. Thompson of Swampscott at King's Chapel, Boston, on January 13. Mr. and Mrs. Thompson are making their home on Puritan Road, Swampscott. The wedding was very quiet, as Ivar's son, Eric W. Sjöström had died less than two months before. Ivar was formerly vice-president of the Manufacturers Machine Company of North Andover.

Bird, in New Hyde Park, Long Island, N.Y., says that he did not have as good a garden as he had hoped, partly due to the Japanese beetle. That is one more reason why James Doolittle '24, a major general, should drop more "block-busters" on Tokyo as soon as possible.

We are sorry to report that Luther Bridges lost his wife on January 22. We all extend our sincere sympathy to him.

To paraphrase the song of the United States Marines, on April 15 the Secretary goes from the ivy-covered halls of Princeton to the shores of Casco Bay, where recently the mercury dropped to 32 below zero with 10 inches of snow. — BERTRAND R. T. COLLINS, *Secretary*, 39 Wiggins Street, Princeton, N.J. SANFORD E. THOMPSON, *Assistant Secretary*, The Thompson and Lichtner Company, Inc., 620 Newbury Street, Boston, Mass.

1890

Goodwin recently received a letter from Mrs. George E. Hale telling of the launching of a Liberty ship named the *George E. Hale* by the California Shipbuilding Corporation. Mrs. Hale was invited to christen the ship, having her daughter, Mrs. Paul A. Scherer (Margaret Hale), as matron of honor. The launching took place on a bright moonlight night. Mrs. Hale writes: "The launching went off successfully, even to my hitting the ship such a resounding blow that the champagne flew everywhere, and the ship moved down the ways slowly and majestically." Thus Hale may be said to be contributing to victory in the present war, as he did in World War I as a leading member of the National Academy and the National Research Council.

And, speaking of posthumous honors, many of the Class may not have heard that in 1940 one of the highest peaks, 13,493 feet high, in Sequoia National Park was officially named Mount Hale. This mountain is located about one and a third miles northwest of Mount Whitney, the highest peak in the United States. Mention of Sequoia recalls an incident illustrating Hale's pride in Technology. Many years ago, in the early Nineties, when he was visiting one of the Sequoia groves, he arranged with the park authorities to have one of the big trees which he selected named and properly labeled "The Massachusetts Institute of Technology."

The city of Pasadena recently paid tribute to George's memory by naming one of the new public schools the Hale School. Thus our beloved and famous classmate is honored in other fields than astronomy, in which his reputation as one of the leading scientists of the country was made.

From Kingsport, Tenn., where the Eastman Kodak Company has a plant, comes the announcement of the 50th anniversary of the marriage of Schuyler Hazard of Georgetown, S.C., to Adelaide

1890 Continued

Erskine Perry of Rockland, Maine. The celebration of the anniversary occurred at their home in Albion, N.Y., on February 15. We congratulate them and wish them many more happy years together. Are there any others equally fortunate in our Class? If so, send in the record.

Gary Calkins, the world's outstanding authority on protozoology, died on January 4. After graduation, he was assistant biologist for the Massachusetts State Board of Health and lectured at M.I.T. He then became a tutor in the newly organized department of zoology at Columbia University and inaugurated the course in biology of the Protozoa. He continued with this department and later became executive head, retiring as professor emeritus in 1939. During this period he did many things besides teaching. In 1896–1897 he carried on field work in Puget Sound and Alaska. Returning from the latter, he lost his entire collection and equipment when shipwrecked. Lectures delivered in the Lowell Institute in Boston served as a foundation for his book *The Protozoa*, published in 1901, which eventually developed into the extensive work on the *Biology of the Protozoa*, published in 1926. From 1894 to 1899 he gave lectures at Barnard College, and from 1898 to 1905 he gave courses on the practical values of microorganisms. He acted as biologist for the New York State Cancer Laboratory at Buffalo from 1902 to 1908 and was consultant to the board for cancer research at Columbia up to the time of his death. He also lectured at the Columbia School of Tropical Medicine in Puerto Rico. During the year 1926–1927, he was director of the American University Union in Paris, and he also conducted surveys throughout Europe for the Rockefeller Foundation. For many years he conducted courses in protozoology at the Marine Biological Laboratory at Woods Hole. He also wrote a popular work, *Smallest Living Things*, as well as other scientific books in his field. He was a member of many of the major scientific societies and associations.

The address of Henry B. Pennell has been changed to Pennell Gibbs and Quiring Company, 23 Fayette Street, Boston. — GEORGE A. PACKARD, *Secretary*, 50 Congress Street, Boston, Mass. HARRY M. GOODWIN, *Assistant Secretary*, Room 4–242, M.I.T., Cambridge, Mass.

1892

The class gift to the Institute of the portrait of Horace S. Ford, Treasurer, was presented at the Class Day exercises on January 30. Professor Charles F. Park made the following presentation speech: "Because of the sudden death of William R. Kales, the President of our Class and a life member of the Corporation of the Institute, it falls upon me to speak for the Class of 1892 at these exercises.

"At a get-together of our Class in April, when the 50th anniversary of our graduation was celebrated, it was voted that we make a gift to the Institute as a token of love for our alma mater. We decided at that time that the gift be in the form of a portrait of Horace S. Ford, Treasurer of the Institute. Harold Brett, one of America's foremost portrait painters, was selected as the artist, and Mr. Ford faithfully carried out his part of the program, so that we now are privileged in having a lifelike picture of this man, which puts into tangible form recognition of his splendid service to Technology.

"I will ask Harry J. Carlson, a member of our Class and a life member of the Corporation of the Institute, to unveil the portrait. I feel that I am speaking for all when I compliment Mr. Brett upon the true and faithful portrait which his skillful brush has created.

"The choice of this gift is significant in that Mr. Ford was not at the Institute when we were students. In fact, he was an unknown quantity, being only a child at that time, too young to go to school. Furthermore, he is known personally by only a few of our members. Nevertheless, in his work at the Institute as bursar in 1914–1934 and as treasurer since 1934, what he has accomplished and the patient and friendly interest which he has invariably extended to the students are known by all.

"Mr. Ford's very able handling of the Institute's finances has been of major importance in enabling Technology to carry on successfully during difficult years and in keeping its financial condition such that the Institute can be most helpful in the present grim emergency. Personally he is known as a fine, companionable man who has greatly endeared himself to the members of the Corporation, the Faculty, and the student body. He receives a student with the same friendliness he does a member of the Corporation. He is loved by all of us.

"It now becomes my pleasant duty in behalf of the donors to present this portrait to the Massachusetts Institute of Technology; and may I ask President Compton to give us the pleasure of accepting this gift from the Class of 1892."

At the get-together meeting at the Hotel Statler preceding the annual Alumni Banquet, the following members of the Class were present: Carlson, Fuller, E. C. Hall, Hutchinson, Ingraham, Locke, Marsh, Park, and Sargent. Of this number, Carlson, Fuller, Locke, Marsh, and Park attended the dinner.

At the business meeting, Charles E. Fuller acted as temporary chairman. After a report from the Secretary-Treasurer, an election of class officers was held. The following officers were elected: J. Scott Parrish, President; Herbert G. Fairfield, Vice-president; Charles F. Park, Secretary-Treasurer. At the suggestion of the Secretary, an executive committee was set up to foster interest of distant members.

A committee on resolutions on William R. Kales, our Class President for many years, was elected as follows: J. Scott Parrish, chairman, Charles E. Fuller, W. Spencer Hutchinson, and Charles F. Park.

The Secretary presented the following statistics: total membership in September, 1888 — 335; total number of graduates in June, 1892 — 132; number who attended first term only — 6; affiliated with other classes — 13; addresses unknown — 38; known deceased — 142; total of present known living members — 136.

The meeting adjourned, and the remaining time was spent in sociability. — CHARLES F. PARK, *Secretary*, Room 5–111, M.I.T., Cambridge, Mass.

1893

Jim Emery, for years the keyman of our '93 New York group and one whose sustained interest in the Class and in the Institute has been exceptionally keen, passed away on February 23. Both for his engineering achievements and his sterling manhood, he ranked among Technology's outstanding Alumni. His only son, J. A. Emery, Jr., like his father, was an M.I.T. graduate in Civil Engineering, Class of 1938. Jim had arranged to attend the commencement and alumni festivities over the January 30 week end. Instead he underwent an operation on January 29, from which recovery was not possible.

A dispatch in the New York *Herald Tribune* gives a good account of his career: "James A. Emery, a vice-president and director of Ford, Bacon & Davis, Inc., consulting engineers of 39 Broadway, New York City, died . . . at his home. He was seventy years old. During his lifetime work as an engineer, Mr. Emery served as a consultant on railroad, subway and streetcar construction projects all over the country. He designed the first trolley that ran by electricity to Coney Island in Brooklyn and for a time was consultant to the New York City Transit Commission.

"Born in Biddeford, Me., he was graduated in 1893 from the Massachusetts Institute of Technology. His first job took him to Philadelphia, where he helped formulate plans for a street railway. After a period of practice in Boston he joined Ford, Bacon & Davis in 1898. He became a vice-president in 1923 and a director in 1928. He was in charge, for the firm, of street railway construction in New Orleans, Atlanta and Birmingham, and his work in the same or similar fields took him to Toledo, Baltimore, Pittsburgh, Syracuse, Providence, Chicago and Seattle, among other cities.

"In 1932 Mr. Emery was engaged by the transit commission in New York to make a survey of its financial and operating affairs. He was former chairman of the Transit Advisory Board of Philadelphia during the construction and operation of the Broad Street subway, and was a member of the Pennsylvania State Board of Valuation Engineers. . . .

"He was the author of many articles on engineering subjects. Mr. Emery was a member of the American Society of Civil Engineers, the Bankers Club of America, the Garden Club of Montclair; the American Transit Association and the Technology Club, of New York. He was a former president of the Montclair Society of Engineers. Surviving are his wife, Mrs. Annie Comer Emery; two daughters, Miss Katherine Emery, of New York and Mrs. Kerby H. Fisk, of Montclair; a son, Ensign J. A. Emery, Jr., U. S. Navy, and three granddaughters. . . ."

1893 Continued

Henry B. Dates of 3071 Euclid Heights Boulevard, Cleveland, Ohio, writes: "I retired as head of the electrical engineering department at Case School of Applied Science in July, 1939, but continued as director of the evening division until the end of the college year 1940–1941. For many years I have been especially interested in illumination, and outside of my official duties at the college I have been especially active in the affairs of the Illuminating Engineering Society, of which I was president for the year 1937–1938. As chairman of a special committee of the I.E.S. on light in wartime, I have recently completed a report of a survey in war-production plants of the part lighting is playing in production, and I have presented our findings to a group of Army, Navy, and War Production Board engineers at a meeting in Washington."

John C. Hawley writes from Delray Beach, Fla.: "I wish that I could come to the reunion, but if we get back to Madison we shall be lucky. I have been ill a great deal of the past eight or nine years and have lived very quietly. Five years ago after a heart attack we were exiled to Florida for the winter months. It is not so bad in some ways, but until this year everyone was here for illness or pleasure and we felt out of the world. Now, however, with all the soldiers, the air full of planes, all the war activities going on, and with the sinkings right off our beach last spring, we feel that we are not out in the sticks." Hawley's winter address is 701 North Swinton Avenue, Delray Beach, Fla. His home address is The Evergreens, Rural Delivery 4, Madison, Wis.

Willis T. Knowlton, who retired (because of his age) in 1941 after serving the city of Los Angeles for 37 years as engineer of sewers and sanitary engineer in the bureau of engineering, is still carrying on occasional consulting practice from his home, 1632 South Van Ness Avenue, Los Angeles. He is a director of the California Sewage Works Association and is active in committee work of the Los Angeles section of the American Society of Civil Engineers.

Florence Marion Laighton, retired physician, whose home was at 37 West 72d Street, New York City, died on January 15 after a short illness. For three years (1890–1893) Dr. Laighton was a student with the Class, in Public Health. From 1893 to 1898 she received her medical training at the Women's Medical College of the New York Infirmary for Women and Children, followed by a year as intern at the New England Hospital for Women and Children in Boston. From 1899 until her retirement 12 years ago, she was in active practice as a physician and surgeon in New York.

Shortly after entering practice, she held appointments as assistant physician in the medical department at Vanderbilt Clinic, and in the neurological department of the New York Orthopaedic Dispensary and Hospital. In 1900 she was appointed examining physician for the New York Life Insurance Company. Dr. Laighton was an assistant surgeon with the United States Public Health Service in 1918 and 1919 and a clinician for the New York Infirmary during the same years. She was a director of the New York Vivisection Investigation League, a member of the New York City, County, and State medical societies, the Massachusetts Medical Society, and the New York Academy of Medicine. Dr. Laighton was born at Portsmouth, N.H., 72 years ago. She is survived by a brother, Alfred P. Laighton of Flushing, N.Y.

St. John Alison Lawton, who owns and operates a plantation in the suburbs of Charleston, S.C., furnished material for an interesting, profusely illustrated article in the Charleston *News and Courier* last November. It seems the Lawtons were entertaining two of a party of 21 British seamen who were passing a two weeks' shore leave on Lowcountry farms near Charleston. So completely won over by these two petty officers of the British Navy that the Union Jack flew from her front porch, Mrs. Lawton, a past President General of the Daughters of the American Revolution, declared, "If I had met those boys before the Revolution, I should have been a Tory."

Lawton's plantation on James Island has been in the ownership of only three persons for a century and a quarter — his grandfather, his father, and himself. He has built up the largest dairy herd in the state, all Holstein cattle. After being graduated from the Virginia Military Institute, Lawton joined the Class as a special student in Architecture, which profession he followed for a time after leaving Technology. Most of his life, however, he has been a planter. His address is Route 1, Charleston, S.C.

The Alumni Office has but recently received notice of the death on December 16, 1941, of Louis Levi, architect, of Baltimore, Md. He was born at Baltimore on December 29, 1868. Following his graduation from Baltimore City College, he studied architecture for a time in the office of a practicing architect, then came in 1890 to Technology, where for two years he was with the Class as a special student in the Course in Architecture. Returning to Baltimore in 1892, he was employed in the architectural office of Joseph Evans Sperry for over nine years. In 1901 he opened in Baltimore his own office, which he maintained thereafter. For some years he had an office in Philadelphia also. He was particularly active in the rebuilding of Baltimore after the great fire of 1904, and many examples of his architectural skill are to be seen, as well, in Philadelphia and Washington. During the first World War he was connected for 14 months with the Emergency Fleet Corporation. In 1911 he married Florence Dalsimer. Their home address was Esplanade Apartments, Eutaw Place and Brooks Lane, Baltimore.

Walter E. Noble, after 42 years in the engineering service of the city of Fall River, Mass., and for the last 27 years deputy city engineer, retired on December 2, 1940, at the retirement age of 70 years. He still makes his home at 507 North Main Street, Fall River. — William W. Peabody, a division engineer for the Metropolitan District Water Supply Commission of Boston, has for the past several years held the important position of engineer-in-charge, in the field, of the Quabbin Reservoir development, which when completed will be the largest artificial lake in the world. Peabody's home address is Highland Street, Holden, Mass.

Samuel Payson Waldron died at his home in Needham, Mass., on February 6 at the age of 72. A year previously he suffered a shock and thereafter was constantly under a nurse's care, unable to walk. He was born on January 27, 1871, at Portsmouth, N.H. Entering the Institute with the Class in 1889, he was graduated in the Civil Engineering Course in 1893. He married Hariet Billington in 1907. His widow and their daughter, June, survive him.

Sam retired as contracting manager in charge of the Boston office of the American Bridge Company on July 1, 1936, thus ending 35 years' service with that company. His retirement for age was in accordance with the established practice of that company which, by appropriate announcement, paid him tribute for his long and faithful service.

Bridgebuilding had been Sam's life work. For four years following graduation from Technology he was employed in Cambridge as draftsman by the Boston Bridge Works, later holding for a short time a similar position with the Pennsylvania Steel Company. During 1898–1900 he was assistant engineer of the Keystone Bridge Works, and in 1900–1901 was assistant engineer of the Eastern Bridge and Structural Company of Worcester, Mass. In May, 1901, he entered the Berlin plant of the American Bridge Company, serving for a year as chief draftsman and then as engineer in charge of the plant. In 1903 he was transferred to the American Bridge Company's New York office, where from 1905 to 1912 he held the position of designing engineer. In 1912 he was transferred to the contract department and on January 1, 1913, was made manager of the company's Boston office. Here he was for more than 23 years prominently identified with bridgebuilding in New England, where he made a host of friends.

The following changes of address have been received: George Guppy, Beaufort, N.C.; Myron Hunt, 816 West 5th Street, Oceanside, Calif.; Edmund I. Leeds, 193 Tremont Street, Newton, Mass. — FREDERIC H. FAY, *Secretary*, 11 Beacon Street, Boston, Mass. GEORGE B. GLIDDEN, *Assistant Secretary*, 551 Tremont Street, Boston, Mass.

1894

Alan Claflin has been of great assistance to the Secretary in helping him secure information about our fellow classmen who are too modest (or shall we say indifferent?) to write regarding their own affairs. As a consulting chemist and manufacturer's agent for chemicals, Alan has a wide acquaintance and many contacts in all the eastern states, although his office is at 88 Broad Street, Boston. We are especially indebted to him for rediscovering Tom Richards, who has hidden

1894 Continued

his light under a bushel for too many years. Tom has been engaged in some aspect of the rubber business practically all the time since graduation, and he is now with Naugatuck Chemical Division of the United States Rubber Company, with offices at Rockefeller Center, 1230 Sixth Avenue, New York. The Secretary proposes to look him up at the first opportunity. Tom reports himself as "like you and all the rest of the old-timers, getting old a little too fast, but in fair shape physically." At the time of his letter to Claflin, Tom's wife was critically ill, a misfortune for which he certainly has the sincere sympathy of the whole Class and our hope for her speedy and complete recovery. The three daughters of the family are married: Josephine, the eldest, is the wife of Dr. James M. Baty of Belmont, who is a professor at Tufts Medical School and head of the Boston Floating Hospital. They have two daughters and one son. The second daughter, Ruth, is Mrs. N. Edward Covel of Cheshire, Conn., and the mother of two daughters; Mary, Tom's youngest daughter, was quite recently married to R. C. Bruik, an officer in the United States Army.

Arthur Patrick was good enough to send to the Secretary a copy of the handsome program and record of the official Army-Navy "E" award made to the Cleveland Automatic Machine Company, of which he is president and his son, G. V. Patrick '28, is vice-president. The award was made on January 27 at the Hotel Statler, Cleveland. An additional Technology flavor was given to the occasion as William E. Wickenden, President of the Case School of Applied Science and formerly on the staff of the Electrical Engineering Department at M.I.T., was the chairman of the meeting. He was introduced by Patrick, who also made the presentation of award for service to a large group of men, some of whom had been associated with the company for 40 years. Our congratulations to Arthur, who has certainly had a long and distinguished record in industry in northern Ohio.

Walter V. Brown of Glen Ridge, N.J., has joined the Floridians, at least temporarily, and has sent in his address as General Delivery, Orlando, Fla. Frank Lovejoy was in Boston for the meeting of the Corporation at the time of the graduation of the Class of 1943 on February 1, but did not come in time for the Alumni Banquet on January 30. In fact, our '94 representation at this dinner was the smallest for years, with Tom Curtis and the Secretary the only members present. Fred Lord was there, but of course '93 claimed him. Tom Curtis looked as fine and full of energy as ever. We decided that we must soon begin to organize for the get-together of the Class in 1944 to celebrate our 50 years since graduation.

The passing years take their toll of our membership. A death which will bring deep sorrow to many of the Class is that of Isaac Brewster Hazelton. Ike was one of the most beloved members of the Class, although for years he had had no opportunity to share in the reunions and other class affairs. His death occurred suddenly and without warning at the Erie Station terminal, as he was on his way home from the Technology Club of New York on January 27. From information received from a member of the Club, we learn that Ike had been there for luncheon and was in his usual high spirits and excellent humor. [See the notes for the Technology Club of New York in this issue. *Ed.*] Our informant writes: "It seems ironical that during the luncheon Ike was joshing some of the other old-timers and made reference to the fact that he was going up next year to the 50th reunion in spite of the fact that he would probably feel pretty old, looking at some of his dear old classmates. While I have no intimate and detailed picture of Ike's activity except from the general knowledge of his work in art, I do know that in his visits to the Club (he was a member for 30 years) it was always a delight to have a few minutes with him because of his optimistic, cheerful, warm personality and his keen interest in the M.I.T. picture."

These words express graphically Hazelton's character and personality. He was one of the most genuine of friends and a wonderful husband and father. His work as an artist had breadth, insight, and a fine human quality. The Secretary had several times visited him at his studio in New York and had opportunity to know him not merely as a classmate of long ago but as a vivid, dynamic personality with a keen sense of humor and a love for his fellow beings. He was also a lover of the sea and gloried in his vacation days at Isle au Haut, off the Maine Coast. Hazelton's three sisters also made high reputations in art.

Ike entered the Institute with our Class, starting in Civil Engineering and later shifting to Architecture. He early began commercial work as an artist and illustrator of children's books. He taught art for eight years at the Rhode Island School of Design in Providence, after which he moved to New York and opened a studio there. He lived at Nutley, N.J., and recently had his studio at his home. While perhaps best known as an illustrator, he was skilled in portraiture. The Institute is fortunate in having two portraits from his brush, one of former President James M. Crafts, which hangs over the fireplace in the big living room at the Graduate House, and the other the portrait of Professor Harry W. Tyler '84, which adorns the wall of the Mathematics Department conference room. Both are lifelike and convey the real character and individuality of their subjects. Another portrait by Hazelton is that of the late head of the Thayer School of Civil Engineering at Dartmouth, and this is also said to be excellent. The Secretary is proud to have been a subject a few years ago; this small but excellent portrait now has an augmented sentimental value, since it was actually a labor of love. A deep bond of affection existed between Ike and myself, so that it is difficult for me to write of him in a detached way. Hazelton is survived by his widow, Mrs. Margarita Hazelton, and a daughter, Priscilla, the wife of John C. Davis.

Since the previous notes were submitted to The Review, we have learned of the death of Elizabeth V. Gaines of Saxe, Va., on April 26, 1942. She was a special student at Technology and associated with our Class.

Richard G. Dukes, who was with us in undergraduate days and is now dean of the graduate school at Purdue University, was a member of the 16-man jury judging the papers in the $200,000 progress award program of the James F. Lincoln Arc Welding Foundation. — Our 50th next year! Plan for it. — SAMUEL C. PRESCOTT, *Secretary*, Room 3–233, M.I.T., Cambridge, Mass.

1895

It is impossible for readers of our class news to scan the news columns of all the daily papers, and thus we must depend on clippings coming to us from various sources. We have one clipping from the Pittsburgh, Pa., *Press* telling of the award of the Hoover Medal to our Gerard Swope.

"Award of the Hoover Medal . . . made to Gerard Swope, president of the General Electric Company, during the winter convention . . . of the American Institute of Electrical Engineers. Named in honor of its first recipient, Herbert Hoover, the medal is a recognition of preeminent engineering service which has advanced the well-being of mankind.

"The career which won Mr. Swope the Hoover Medal started with the Western Electric Company after his graduation from the Massachusetts Institute of Technology in 1895. During the first World War, he served on the Army General Staff as assistant director of purchase, storage and traffic. For this he received the Distinguished Service Medal and was made a Chevalier of the French Legion of Honor. Since then he has been with General Electric, of which he recently was elected president for the second time."

Ellis C. Thayer, VI, has moved from Multnomah to Taft, Ore. — We regret to learn that Mrs. Moore, wife of our late John D. Moore, has passed on. Their presence always added to our reunions. — LUTHER K. YODER, *Secretary*, 69 Pleasant Street, Ayer, Mass.

1896

Although Tuesday, February 16, was a record cold day, and also a meatless Tuesday in New York City, the gathering of classmates at the President Tavern was most successful and the menu most satisfying. Rockwell made the trip over from Boston and Walter Stearns came down from Schenectady, thus making a total of nine, with Bakenhus, Locke, Partridge, Ruckgaber, Sager, Tilley, and Trout. Rutherford replied that his health had not been too good since December, and under the wintry conditions he did not feel that it was wise to make an evening trip to New York. Dorrance had planned to attend but wired at the last minute that illness was keeping him away. Calvin Crocker, who is spending the winter

1896 Continued

in South Norwalk, Conn., instead of in Florida, reported that with poor going, gasoline restrictions, dimouts and such, he seldom stirred out of the house at night and had not actually been in New York since last April, so that it would be difficult for him to attend. Karl Pauly replied from Marshfield, Vt., where he had been called because of the serious illness of his brother, who fortunately was much better. Incidentally, Karl had had the misfortune to lose his suitcase when traveling by bus and was considerably concerned. He first thought someone had stolen it, but later, to his joy, he found that it had been taken by mistake, and when the error was discovered it was returned to him promptly.

Arthur Baldwin, way down in Virginia, declined with tears in his eyes, and only wished that some excuse might be found for him to make a trip to New York at the time of the class gathering. A reply from Mrs. Lawrence in Baldwinsville reported that Charlie had not enjoyed robust health for a year or more, so that a trip for him to New York was out of the question. Dan Bates was due to start with Mrs. Bates for Arizona on February 10, to make a visit of some weeks to their son and his family, who live in Tucson. Ed Sturtevant replied from Washington that he had not been out of that city for nearly two years, and gas rationing and travel conditions did not hold forth much promise that he would get out for some time to come. Fortunately his line of wholesale groceries seems to be in the essential class, and his business keeps him tied down very closely to a routine. He especially asks that if any classmates should be in Washington, they should make note of his post-office box, No. 1433, and look him up and partake of a bite to eat. He even offered one half of a bed if anyone should be unable to find any sleeping accommodations and could stand sleeping with a chronic snorer.

Dr. Freedman had promised himself not to miss the gathering this year, but at the last minute some urgent government work kept him away. Dr. Coolidge, who cannot look very far ahead these days, replied that it looked as if he would either be in Washington or in Florida on the evening of the dinner. Paul Litchfield had a directors' meeting scheduled for February 15 and was due to leave for the West Coast on February 17, so that there was not a chance for him to get to New York. Father Partridge had not expected to be with us, as he had been in St. Johns Hospital in Brooklyn for a month and a half, but fortunately he convalesced sufficiently to attend. W. H. Thomas, who runs the St. Christopher School in Westfield, N.J., reported that the doctor allows him to keep on with his daily routine but holds him back on any extra things. Jim Melluish could not appear this year, as he is putting in long hours on his job and has to recuperate in his evenings. Gaylord Hall was another old stand-by who declined this year without giving any reason. Declinations were also received from Steve Crane and Russell Starr, neither of whom gave any reason.

The whole affair was in the hands of Admiral Bakenhus, who claims that his lieutenants, Sager and Tilley, did all the work. At any rate, it was a fine party which lasted from 6:00 P.M. to 11:00 P.M., with the irrepressible John Tilley taking the lead. These annual affairs seem to become more precious to the New York crowd as the years go by, and certainly the Secretary looks forward to these get-togethers on the occasion of his annual February trip to New York.

Dave Beaman, with Mrs. Beaman, spent most of December in Durham, N.C., visiting their son, his wife, and baby. David, Jr., who is M.I.T. '38, is with the Division of Physical War Research, with headquarters at Duke University. Fortunately he was able to rent one of the professors' houses on the campus, from a professor who had to go to Alaska for the duration. The university itself is located on a reservation of 5,000 acres, with a fine set of buildings and a beautiful campus, and most of the professors' houses are located on this large tract, all within a mile or so of the college.

The Secretary sent an SOS to Mark Allen in Detroit, which Mark answered promptly and efficiently. In his reply he reported that Jim Driscoll showed up in Detroit last September at a convention of superintendents of cemeteries, and at that time Mark had his secretary and the superintendent of Woodmere Cemetery take Jim down to the Ford bomber plant. It seems strange that Jim would not inform the Secretary himself when he goes off on important trips. Mark also reported that Mrs. Allen had been visiting her daughter in Darien most of the fall, but had come back home for Christmas. Their son Richard joined up in the Navy last May and went to the Great Lakes and Chicago naval stations and thence out to Treasure Island at San Francisco. At the time Mark wrote, the last of January, Richard was at home awaiting a call to Washington as a lieutenant (junior grade) in the Bureau of Ships. Mark's son-in-law, John W. Hession, Jr., was in Washington on some Navy work and had been recently appointed to the National Defense Research Committee. Mark must be taking the '96 class book to bed with him, as he said that up to the time he wrote he had read it three times.

One of the rewards of the appearance of the class book was a letter from Leebert Lloyd Lamborn, who has been located in Mexico City for some years. He is most enthusiastic over Mexico and says that any who are keen for an ideal vacation should come to Mexico City, where he will gladly welcome them and arrange to put them up at his hotel, or afford opportunity for relaxation at his home in Cuernavaca. He states that he still has the health of a boy of 20 in the finest climate in the world.

Jacobs has been having a rather tough winter in Burlington, Vt., with cold, snow, rain, icy sidewalks, and so on. His chore this winter as state geologist, in addition to professorial work at the University of Vermont, has been the preparation of a book on Vermont copper mines, which is expected to come off the press before long.

Lythgoe has sent the Secretary a reprint of his article on the "Cold Storage of Food" which appeared in *Industrial and Engineering Chemistry*, volume 35, page 29, January, 1943, which is an excellent summary of laws pertaining to cold storage and the various aspects of cold storage in relation to our food supply.

A note of thanks has been received from Mrs. Nevin for the floral tribute from the Class at Charlie's funeral.

While in New York, the Secretary learned from Ralph Williams '04 that our classmate L. H. Goodhue died on September 11. Upon returning to Boston, the Secretary communicated with the son, L. H. Goodhue, Jr., '30, who is with the Dewey and Almy Chemical Company in Cambridge. Except for a short period of service as instructor at M.I.T. after graduation, Goodhue's work was with the Boston Rubber Shoe Company in Malden. He rose to the position of general superintendent, from which he retired in 1931. His job and his home were his life, so that he did not appear at Technology affairs or at class gatherings. After his retirement he continued to live in Malden but spent most of his summers in Boxford, where he indulged in his pleasure of flower gardening. Beginning last April his health was not so good, but the end on September 11 came rather suddenly. Besides his widow and his son, L. H., Jr., he leaves a daughter, Alice.

The Secretary has also recently received word of the death of James Albert McKay, which occurred on January 15, 1942. Ever since leaving M. I. T., he had been connected with the family business of James McKay and Sons, manufacturers of chains and forgings in Pittsburgh and the McKay Company in Pittsburgh. He was also secretary of the United States Chain and Forging Company.

Two new changes of address recently received are Frederick W. Bartlett, Yarmouth Port, Mass., and John L. Wagner, 1327 Teall Avenue, Syracuse, N.Y. — CHARLES E LOCKE, *Secretary*, Room 8–109, M.I.T., Cambridge, Mass. JOHN A. ROCKWELL, *Assistant Secretary*, 24 Garden Street, Cambridge, Mass.

1898

We have observed the 45th anniversary of the graduation of our Class. Because of the war, our reunion was very limited in scope, but it was none the less keenly enjoyed by those who were able to attend. Those present were: Charley Wing from New Bedford, Bob Wallace from Cleveland, Dan Edgerly from Chicago, Fred Dawes from Hudson, Elliott Barker from Arlington, Henry Sullivan from Brighton, Joe Riley from Jamaica Plain, John Dodd from Brookline, George Cottle from Jamaica Plain, George Treat from Braintree, Arthur Blanchard from Brookline, Ed Chapin from Boston, and Ernest Russ from Boston. It will be noted from this list that our reunion did not unpatriotically tax our transportation system, because Edgerly and Wallace, the only ones from outside Greater Boston, combined

1898 Continued

this event with necessary trips to this region. Maurice Thompson, Ernest Bragg, Frank Colcord, and Lester Gardner had expected to attend but were prevented at the last minute.

We met for luncheon at the University Club, and after lunch stayed there through the afternoon, in good-fellowship discussing everything in general and ourselves and classmates in particular. Late in the afternoon, George Cottle took us to the Algonquin Club for a drink of lemonade. From there we went to the Hotel Statler for the Alumni Banquet, where we greeted friends from other classes and the Institute Faculty and officers.

The three Technology Professors Emeriti of '98 are all contributing to the war effort: Joe Riley does much consulting work; Maurice Thompson is teaching classes of servicemen at Wentworth Institute; and Arthur Blanchard is carrying on research work on war materials at the Institute.

Lester Gardner sent us an attractive booklet commemorating the 10th anniversary of the Institute of the Aeronautical Sciences, of which he is executive vice-president. The annual meeting of the institute came the same week end as our reunion, and although Lester had planned to try to take in both, he had to telegraph at the last minute for us to hand over his ticket to the Alumni Banquet to a member of the graduating class.

Bob Wallace says he has retired from business, but from all we could make out he is still a pretty busy man. His home is in Camden, Maine, where he lives from May to October. He would like our Class to have its June reunion at Camden. The Class voted quite decisively during the afternoon of Alumni Day that they did want a real old-fashioned reunion in June. They agreed the details should be left to the same committee that arranged this restricted reunion and that the big reunion should probably be postponed until restrictions on travel and gasoline are lifted.

Ernest Russ had received a letter from Edgar Weimer, in which he sent best wishes to the '98 crowd. In the letter, he outlined conditions in the steel industry and particularly set straight some of the general misinformation about sponge iron.

Ernest also read a letter from Howard Bodwell, who wrote as follows: "As you know, I retired from the United States Steel Corporation on March 31, 1941, after 40 years of very pleasant association with that company. After a most enjoyable vacation of about a year and a half, most of the time at La Jolla, Calif., I felt the urge to get to work again where I might be useful in the war effort. I became senior engineer in the industrial production branch of the Pittsburgh Ordnance District.

"After a brief period in this capacity, I accepted my present job as Pittsburgh district manager for A. Milne and Company, tool steels, of New York, Boston, Chicago, and Pittsburgh, and I am enjoying the work very much. My office is at 604 Frick Building, Pittsburgh, Pa., and I hope that any of the '98 boys coming to Pittsburgh will drop in to see me. It will be a great pleasure at least to have lunch together and to reminisce about the old times at Technology."

Henry Sullivan is the proud grandfather of Keith Murray MacKenzie, Jr., who was born on December 9. The father, Captain MacKenzie, is supply officer for a division of the Quartermaster Corps.

Paul Johnson's reply to our reunion notice contained a snapshot of Pop Coburn taken long ago. This certainly recalled pleasant memories to us all. Paul's son, Seymour, is doing important work in the Radiation Laboratory at the Institute. Last year, Paul wrote that he started with about a hundred Rotarians on a good-will tour of Mexico by special train. They went as far south as Taxco, a very beautiful and picturesque place. The tour lasted 17 days, and he enjoyed it so much that when he got back he wanted to go right down there with his wife to see the country more leisurely in his own car. We learned also that Paul is a director and large stockholder in two private water companies in Altadena, Calif.

Frank Coombs wrote: "Sorry I could not take part in any of the Alumni Day events. I am now with the Douglas Aircraft Company at Long Beach. We did have Christmas off, but worked on Thanksgiving and New Year's. My warm regards to the old guard. Keep 'em flying." — Harvey L. Currier now lives at 81 Norfolk Avenue, Swampscott, Mass. He had this to say: "The only recent change in my status is approval of optional retirement, effective as of June 1, 1942, by the Navy Department from my position of principal marine engineer, design section, New York Navy Yard."

From Alvan L. Davis came the following: "I believe I shall still be in good health in 1948, and then I'll make a point of attending whatever reunion you may have. Regards to all the boys." — Dave Fenner sent this: "Am putting in 60 hours a week as a dollar-a-year consultant in the automotive division of the War Production Board. Hope those at the reunion had a swell time. Let's try again in June. I just had a note from H. E. Sargent, 222 Arroyo Terrace, Pasadena, Calif."

Arthur Franklin has been doing defense work at Purdue University. — Clarence Goldsmith served for 18 months as advisory fire protection engineer in the office of the chief of engineers of the Army. Since April, 1942, he has acted as chief consultant of the fire defense section of the Office of Civilian Defense in Washington, D.C.

George D. Huntington wrote: "We have moved from Detroit to the suburb of Grosse Pointe. We have two children doing defense work and one, a lieutenant in the Navy, who has been at sea for almost two years. Only one child is at home now. Another daughter is an air raid warden."

Robert Lacy says that every Monday the M.I.T. members of the Engineers Club of Baltimore have lunch together at the club. — Van Rensselaer Lansingh, VI, has been in the mining and smelting business since 1921. For ten years he was president of the York Metal and Alloys Company, with offices in New York and plant at York, Pa. In 1929, his company merged with the Molybdenum Corporation of America, with headquarters in New York. Since that time he has been vice-president of the company with special reference to the mining end of the business, having charge of the company's mining interests in the West. For the last two years in addition to the mining interests he has had charge of the company's affairs in Washington, D.C. He maintains an apartment at the Lee Sheraton Hotel, 15th and L Streets, Northwest, where he spends about three days each week. His office in New York, where he makes his headquarters, is at 500 Fifth Avenue.

A. Appleton Packard said: "Sorry I couldn't attend the reunion. I am laid up for repairs, so that I have been unable to leave Andover for the last two years." — Charley Pease was starting for the sunny South and was sorry he had to miss our meeting. — Ralph Rumery regretted that he couldn't come. He wrote: "I have no particular news about myself. My younger son, Richard, is somewhere overseas in the Air Corps. Just where, we do not know at this time."

C. W. PenDell sent best regards and told the following about himself: "As the 'boys' have not heard for a long time how the world is using me, it might be well to report that I have retired from active service in what has been my main job for the last 36 years — engineer, sales department, Public Service Company of Northern Illinois, a public utility company rendering gas and electric service in about 6,000 square miles of northern Illinois. For many years I have also been a director in three manufacturing companies and an officer in two of them. These interests will help to while away the time and keep me from getting lonesome." — Milan V. Ayres is in Chicago teaching electrical fundamentals and radio to the soldiers at the technical training command of the Army Air Forces.

Fred Twombly wrote: "I am sorry that I could not be in Boston on Alumni Day, but I am very busy with my importing and exporting business. I am the president of F. H. Twombly Company, Inc., 15 Moore Street, New York City. We import principally sausage casings, goatskins, and sheepskins. We export whatever we are called upon to ship. The red tape is similar to what the newspapers describe, and then some. We are doing well, however. I mention this so all the boys will eat as many sausages as they can hold. The more they eat, the more casings will be needed, although most of the casings are going to the Army supply depots for the armed forces.

"My health continues good. While I probably am older than 45 years ago, I don't feel older except when I undertake to walk upstairs. My knees are not too strong for that kind of walking. Having had 45 years' experience in foreign trade, I think I shall keep at it as long as I can. I shall make a point of trying to be at the next reunion to greet the boys of '98."

1898 Continued

Karl Waterson said: "Sorry that I couldn't get to Alumni Day on January 30. I have nothing to report. Retirement is proving pleasant. All are well. Anne, aged 10, and K. W. Jr., aged 7, are so active that it taxes me to try to keep up with them. Life is not very restful, but, fortunately, I don't need that yet."

Horace R. Thayer has written two more books during the last three years, *Blue Print Reading* and *Industrial Drawing*, both published by the McGraw-Hill Book Company, Inc. In all he has published ten volumes. — Charley Winslow from New Haven, Paul Wesson from Rochester, N.Y., and Lewis Seidensticker from Montreal all sent greetings to those at the reunion and regretted that they could not be with us.

We have the following new addresses to report: Howard L. Bodwell, A. Milne and Company, 604 Frick Building, Pittsburgh, Pa.; Howard B. Collins, from Salt Lake City to Post Office Box 44, Creede, Colo.; George R. Davison, 34 Youle Street, Melrose, Mass.; George D. Huntington, 520 Neff Road, Grosse Pointe, Mich.; Charles S. Hurter, 1005 Delaware Avenue, Wilmington, Del.; Henry R. Robinson, Swayne-Robinson and Company, Richmond, Ind.; Mary J. Thomson, care of Miss Edith M. Canfield, Route 3, East Stroudsburg, Pa.; Robert B. Wallace, Kinney Steamship Company, 450 Rockefeller Building, Cleveland, Ohio.

We have to report the following deaths: Harrington Barker on December 23 in Washington, D.C.; Francis P. Bergen on November 22 in Westfield, N.J.; John F. Cashman on December 4, 1941, in Bridgewater, Mass.; Albert W. Hitchcock on July 25 in Southbridge, Mass.; Edwin R. King on October 24 in New Bedford, Mass., in his 87th year; Benjamin F. W. Russell of Boston on February 11; and Edwin E. Wightman on January 28, 1942, in Lakewood, Ohio.

From the Washington, D.C., *Star* we quote the following: "Harrington Barker, 67, former supervisory examiner in the Patent Office, died . . . at his home, 1210 Thirty-fourth street S.E. He is survived by his widow, Mrs. Emma Bishop Barker; a sister, Miss A. Louise Barker, and two brothers, John Herbert Barker and Newell A. Barker, all of Cambridge, Mass.; and a nephew, John Arthur Barker of Hartford, Conn.

"Mr. Barker was born in Cambridge, and was graduated from the Massachusetts Institute of Technology in June, 1898, with the degree of bachelor of science in mechanical engineering. He came to Washington in 1899 as an assistant examiner in the Patent Office. He was made division chief in September, 1920, and supervisory examiner in 1937, retiring from the latter position in March, 1942. In addition to holding membership in the Patent Office Society, Mr. Barker was a member of the Sons of the American Revolution and was an active yachtsman, serving as commodore of the Corinthian Yacht Club from 1911 to 1913. Mr. Barker was for many years associated with the Wesley Methodist Church choir and was at one time its director. An active member of that church for many years, he was a member of the Board of Officers at the time of his death." — ARTHUR A. BLANCHARD, *Secretary*, Room 6-421, M.I.T., Cambridge, Mass.

1900

The Alumni Dinner at the Statler in January found the Class well represented with a full table, consisting of Blair, Draper, Fitch, Patch, Charlie Smith, Ziegler, Neall, Silverman, and the Secretary. A short business meeting at the University Club preceded the dinner.

Listed in "The Technology Bookshelf" for 1942–1943 is *Handbook of Ship Calculations, Construction and Operation* by C. H. Hughes.

A nice letter from Crowell is here, from which excerpts follow: "I am living the life of Riley with a cellar full of coal, a stoker furnace for heat, and a deer hanging in the barn (not much left now). The weather is so cold you can't do much on the bogs. I putter around in the basement on a couple of outboard motors and jobs of that nature. . . . If any of the boys are down this way next summer, I'd be glad to furnish boats and guide for a seabass trip. I think I may turn commercial fisherman in order to get gas for the boat."

Harry Grant in Washington takes pity on this meager column and sends the following: "I see Marcy Sperry every week. His duty as president of the Washington Gas Light Company keeps him continuously busy in these days of fuel shortages, labor shortages, and unbelievable changes in the population of Washington, Arlington, Alexandria, and the territory they cover. Notwithstanding these business interests, Marcy takes time to address himself to several important charity and welfare organizations of which he is chairman or trustee. He also faithfully gives at least one-half day a week to attending the meetings of the supervisory draft board for the District of Columbia.

"Also, I see Harry Morris frequently. If we were having a reunion today, Harry could pass for the youngest man in the Class. I am inclined to believe he is the youngest man in the Class. He has not acquired the rotund proportions which have been vouchsafed to some of us. His fine shock of hair is still with him complete and intact, except that it is almost snow white. As you probably know, Harry has devoted himself for many years to the development of real estate in Arlington, Va. With that clarity of foresight which was evident in college days, he anticipated the amazing growth which burst upon the Virginia landscape some five or six years ago. With the Pentagon Building now in the heart of the area which Harry selected for the overflow of Washington activity and with the increase in the population of Arlington County leading the rate of growth for the entire country, Harry is an active citizen.

". . . I set up a business of my own in Washington 11 years ago. It is built on the principle of serving manufacturers and corporations on their individual problems pertaining to government contract work. My son Charles, a first lieutenant in the Air Corps, is navigator on a Martin B-26 bomber and has been in the Far East nearly a year. He has been in continuous action, and official word from the United Press reports his bomber (the *Sorry*) in 46 combat engagements and 580 flying hours up to January 1. Two planes have been lost in combat, but the crew has escaped both times. Charles is enthusiastic about the Air Corps and about the co-operation between the various services in the Far East. He writes that the morale of the men and the character and quantity of the equipment coming over are all that could be asked."

Changes of addresses received by the Secretary include that of Greenleaf W. Pickard to 59 Dalton Road, Newton Centre, Mass., and that of Fred B. Wilder to 1216 North Edgemont Street, Los Angeles, Calif. — C. BURTON COTTING, *Secretary*, 111 Devonshire Street, Boston, Mass.

1902

As evidence that time flies, Louis Moore received a life membership certificate from the American Society of Civil Engineers at the annual meeting of the northeastern section in January. After 35 years of paying dues, he now gets off free. — Roger Greeley is now president of the Boston Society of Architects and has recently been appointed by Governor Saltonstall to a special committee to study building codes and safety policies. The committee will suggest improvements in building and fire laws to lessen the danger of having further catastrophes like the recent Cocoanut Grove fire here in Boston.

Our Class had but six at the Alumni Dinner held at the Statler on January 30. Those who showed up were Hunter, Moore, Bassett, Williams, Patch, and Philbrick. We regret that more did not come, as our gatherings are few and far between, with our reunion omitted of necessity.

Word has been received of the death of Mrs. Charles W. Witherle, the former Caroline Muzzy Dresser, VI. She died on December 8 in Portland, Maine.—Another death to be recorded is that of Louis E. Vaughan, IV, who died on February 2 after a very brief illness. At the time of his death, Vaughan was chief engineer of the Fiske-Carter Construction Company of Worcester, Mass. He had been with the company since 1908, when he started in as estimator. He leaves a widow, Josephine Boyd Vaughan; a son, Francis, who has been with Du Pont since his graduation from Technology in 1933; a daughter, Ann; and a two months' old granddaughter. Vaughan took a great interest in Technology and at one time served as secretary-treasurer of the Worcester County Alumni Association of M.I.T.

Bert Sherman has again added to the grandchild list, with Michael Burgess Sherman, born January 7. — The home address of Norman Borden, a lieutenant in the Coast Guard, is now Merrimacport, Mass. Waldo Comins has moved to 4475 West Pine Boulevard, St. Louis. Theodore

1902 Continued

G. Miller's new address is 150 Paseo La Reform, Mexico City D.F., Mexico. — Arthur Sawyer, although stationed at Washington, finds that his work for the government requires considerable traveling. In January he made a trip through the West, looking at fluor spar mines in the Far West and also in the Illinois-Kentucky fields; he reports the work extremely interesting.

Since starting to write these notes, I have received word of the death, on January 31, of Harold O. Bosworth, after a hospital operation two days before, in Denver, Colo. This news comes as a great shock to all of us who had met him at recent reunions and heard from him or of him in his Technology activities as honorary secretary for the Denver region. At the time of his death, Bosworth was president of the Denver Fire Clay Company, with which he had been for many years. Directly after leaving the Institute, he went with them as superintendent of factory; from there he went with the Mine and Smelter Company of Denver as manager of the assay supply department. He then transferred to the Allentown Brick Company, Allentown, Pa., and after a short time with the German-American Stoneware Company, returned to Denver to renew his connection with the Denver Fire Clay Company, which he headed for many years. Bosworth leaves his widow, Helen Boehmer Bosworth; two sons, Otis and Richard; and a daughter, Eleanor. — BURTON G. PHILBRICK, *Secretary*, 246 Stuart Street, Boston, Mass.

1906

Eight of the faithful appeared at the Alumni Banquet held in the Hotel Statler, Boston, on Saturday, January 30. They were W. G. Abbott, Herbert Ball, Sherman Chase, Henry Ginsburg, Bill Messenger, Sam Nash, Abe Sherman, and your Secretary. Ray Philbrick, whose record for attendance has been excellent, wrote to the Secretary on January 2 to the effect that he had had another slight setback in health and was leaving for Florida on January 15.

Under the date of January 14, Ralph Patch reports that he entered active duty as a lieutenant colonel in the Sanitary Corps. He is located in Washington. His assignment is labor supply officer in charge of man power, Office of the Surgeon General. — From our address changes, we note that Walter G. de Steiguer now has a major's commission and is located in Washington.

Ralph C. Lawrence of Fitchburg, Mass., died on January 14. Our card record shows that since leaving Technology he had apparently spent all of his time in the real estate business in Fitchburg. — JAMES W. KIDDER, *Secretary*, Room 801, 50 Oliver Street, Boston, Mass. EDWARD B. ROWE, *Assistant Secretary*, 11 Cushing Road, Wellesley Hills, Mass.

1907

The Army-Navy "E" production award was won in January by the Ilg Electric Ventilating Company, the firm of which John Frank is president. The presentation ceremonies took place at the plant in Chicago on February 11, John himself giving the speech of acceptance. He thoughtfully sent me a copy of the program, which will be filed in our class archives and will be on exhibit at our next reunion.

Only seven classmates were present at the Alumni Banquet in Boston on January 30, in spite of our efforts to secure a large attendance to greet Clarence Howe, who sat at the head table as a guest of the Institute. Both of the Secretaries were unable to attend because of the difficulty of returning in the late evening from Boston to the towns in which they live. Lawrie Allen, Jim Barker, George Crane, Ralph Hudson, Ed Lee, Ed Moreland, and Don Robbins made up the '07 group. Lawrie wrote me that Clarence stepped down from the head table during the dinner and chatted with the fellows, and that after the banquet they met Clarence, Dr. Compton, B. Edwin Hutchinson '09, who was one of the dinner speakers, and others in Hutchinson's hotel suite. Lawrie went to the graduation exercises on February 1 and heard Clarence make his splendid address. On this occasion, Dr. Compton began his remarks by referring to the fact that it was very much an '07 gathering, in view of the fact that Howe was commencement speaker, Alexander Macomber was chief marshal, Ed Moreland was marshal of recipients of engineering degrees, Ralph Hudson was chairman of the Committee on Commencement, and two '07 members of the Corporation, Jim Barker and Don Robbins, were seated on the platform.

Through the courtesy of Arthur L. Shaw '09, we have a copy of an extract from the "Army Hour" radio broadcast given over WRC on Sunday, January 10, when our classmate, Stuart C. Godfrey, a brigadier general, was the principal speaker. In presenting Stuart, the announcer said: "Today the 'Army Hour' brings you a firsthand report from the man in charge of our aviation engineers who have done such an efficient job. We take you now to Washington for an eye-witness account from the air engineer of the Army Air Forces, just returned from North Africa."

The broadcast is too long to give fully, but two paragraphs can be quoted: " 'Airdromes in a hurry' is the motto of the aviation engineers, the Corps of Engineers component of the Army Air Forces. Wherever you find an air force, on some barren island in the Aleutians, in the jungles of New Guinea, or in the deserts of Africa, you will find these engineers on the ground, clearing and grading, hewing out a runway, and adding taxiways and dispersed parking areas. Lightweight portable hangars are being moved to these advanced airdromes to shelter planes from dust and weather. Portable lighting units make possible the continuance of work at night. Camouflage helps to conceal planes and avoid losses on the ground. And let me add, the aviation engineers, always combat minded, are trained and prepared to help defend these fields from enemy attack. Equipped with rifles, carbines, antiaircraft machine guns, and antitank guns, they are ready to deal with enemy paratroopers or ground raiders who may have ideas of taking over what we have built. . . .

"On Christmas eve I talked with the youthful crew of one of our bombers which had been in a raid over Bizerte. Intense antiaircraft fire had shot out two engines, and enemy fighters — three Messerschmitts — got the third engine and wounded a gunner. But the fourth motor brought the crew home, *after* they had completed their bombing run. *Will* we build airdromes for these gallant aviators of ours? With all our hearts, and with all speed, whenever and wherever they need them."

A long article in the Washington, D.C., *Post* of November 15, entitled, "These Leaders Opened the African Front," prepared by a staff writer, begins thus: "In the hands of seven men a mighty hammer fell across long miles of sea last Sunday morning and rang on the shores of North Africa a note of hope for the world." Then the careers and accomplishments of these seven military leaders are described. One of the seven is our classmate, Lloyd R. Fredendall, a major general, who commanded the center landing force. I quote: "Fredendall is a small man with a big voice [you will recall that he was just that in the days of our freshman drill at Irvington Street Armory], a soldier's soldier whose caustic and sulphurous comments convey his quick decisions with no possibility of doubt as to their meaning. His forte is action, immediate, straight to the point, unvexed by frills and furbelows, and because he gets results his men love him. At the critiques during First Army maneuvers in the Carolinas in the fall of 1941, Fredendall's appearance on the speakers' platform invariably brought forth a burst of applause from the darkness in front where sat the men who served under him. . . .

"His determination to be a soldier was like everything else he determines to do. Admitted to West Point, he failed after a year. Admitted again, he failed again. Then he went to Massachusetts Institute of Technology, and was commissioned from civil life February 13, 1907. At the end of the next April he sailed for the Philippines, where he joined the Second Infantry. After service in Hawaii and along the Mexican border, he was ordered to France in April, 1917. There he served until 1919, and, returning to the United States, was made instructor at the Infantry School at Fort Benning, Georgia. In 1923 he attended the Command and General Staff School, finishing as a 'distinguished graduate.' He received his first division command in October, 1940, when he was given the motorized Fourth Division at Fort Benning. He was assigned to command the Second Army Corps, with headquarters at Wilmington, Delaware, in August, 1941, and took over the new Eleventh Corps at Chicago in June, 1942. . . . He was born December 28, 1883, at Cheyenne, Wyoming. . . ."

1907 Continued

Under the heading, "Society To-day," in the New York *World-Telegram* of February 2, appeared a rather long item from which I quote: "Eleanor L. R. Lawrence changed the routine of her life . . . when she married Col. Harold S. Wilkins yesterday afternoon. The ceremony was performed at Calvary Episcopal Church. After their wedding trip they will return to the Hotel Ambassador, where she has been living. The colonel will commute to his duties in Dover, N.J., at Picatinny Arsenal. . . . Daughter of the late James Gore King Lawrence, president of the Coney Island Jockey Club and founder of the Lawrence Realization, the Futurity and the Suburban at Belmont, Eleanor has been interested in sports. . . . Colonel is . . . a graduate of Lawrenceville and the Massachusetts Institute of Technology. . . . He is a great-grandson of Benjamin Trumbull, the historian."

Our congratulations to our classmate! It is not often that we have the opportunity to record the marriage of one of our fellows in these notes. Harold was a graduate in Course II. He was assistant to the master mechanic at Republic Iron and Steel Company from 1907 to 1910, then an assistant in physics at the Institute for two years, an instructor in physics at Phillips Academy, Andover, Mass., from 1913 to 1917, and since then has been an officer in the United States Army, in the Ordnance Department. He took special courses at Harvard in 1915 and at Columbia in 1916.

From the Miami, Fla., *Herald* of January 20: "A group of 21 prominent scientists headed by Rear Admiral A. H. VanKeuren, director of the naval research laboratory, arrived at Miami yesterday for a one-day inspection of technical equipment used by the Gulf Sea Frontier in anti-submarine warfare. They will make a visit to the navy's big submarine chaser training center, the only activity of its kind in the nation." President Compton was one of the party. VanKeuren is affiliated with our Class, Course XIII-A.

A letter dated February 6, on a letterhead, "Petroleum Administration for War, Los Angeles, California," from Lawrence C. Hampton reads as follows: "I was very pleased to receive recently the list of our classmates with their addresses and occupations. I hasten to correct your records as to my occupation. My home address is the same, 1211 Adair Street, San Marino, Calif. I believe I previously advised you that I have two children, a boy six and a half years old and a girl five years old. In August, 1941, I left the Union Oil Company's service after 22 years and was employed immediately as administrative engineer by Bechtel-McCone-Parsons Corporation of Los Angeles on the Missouri Ordnance Works. This plant was financed by United States Ordnance and was built for the Hercules Powder Company. On June 1, 1942, I left this concern and started in the Office of the Petroleum Coordinator for War as chief material specialist. I enjoy this work and believe I am doing my bit toward winning the war."

Ralph Crosby, who is one of our good class correspondents, wrote on February 1: "It was with sincere pleasure that I received your class list with news of the reunion. I have worked so much and such continuous hours, seven days a week mostly, that the last six months have sort of put me in a rut. My home address is changed, as some of the children came home and we needed a larger place. The address is 851 South Illinois Street, Springfield, Ill. My firm changed its name also, and I am now chief engineer of the Keckley Manufacturing Company, formerly the Lourie Company, in Springfield.

"I had a major nasal operation last November which set me back on my heels for a few weeks, but I feel 100 per cent now. My youngest girl was married on November 1 to Robert King of this city. My son has tried to enlist in every branch of the service but gets nowhere on account of his eyes, and he is laboratory assistant in the department of health — analyzed all kinds of water, milk, sewage, and so on, during the past year. We now have five granddaughters and two grandsons, bringing the total family to 20, counting four sons-in-law." Ralph has six daughters and one son. We believe that his is the largest '07 family. —BRYANT NICHOLS, *Secretary*, 23 Leland Road, Whitinsville, Mass. HAROLD S. WONSON, *Assistant Secretary*, Commonwealth Shoe and Leather Company, Whitman, Mass.

1909

Your Secretary sent in the following report of our New York gathering: "We've had at least two class luncheons a year in New York since about 1922. Generally, we've met just before Christmas and again in the spring. We've tried to get the spring luncheon scheduled before the golfers made too many dates. There are almost 75 New York '09 men on the Alumni Office lists, but many have allegiance to some other Class or to another college. If we have 15 or 20 at one of our luncheons, we feel that the Class is living up to its ancient reputation for loyalty to the Institute and to the Class. Besides, when a luncheon is being planned, New York always seems too big. The Technology Club is too far from Bay Ridge and Oyster Bay or from Staten Island and Montclair. Even so, numbers aren't everything. These luncheons have been the means of my making some of my choicest friends.

"During all these years, you could count on maybe 15 who always came if the date was convenient. These came to be the 'regulars.' I think all of the regulars feel much as I do: We have become the nucleus of the Class here in New York. The custom has been to meet on Saturday noons. We never tried to have any function in the evening. That has seemed too hard on the commuters, and who of us isn't a commuter? Even our dyed-in-the-wool urbanites have now gone elsewhere: Molly Scharff is in Washington, and Mex Weill is in Port Jervis. Dale Ellis lives in the swanky purlieus of East 86th Street, but his commodore heart belongs in Port Washington, where even now his boat is awaiting the grooming that will prepare her for the sailing party that's being planned. So here was a howdy-do! The new Review Secretary of the Class comes to town to see that the American Institute of Electrical Engineers pulls no boners at its convention. Busy as Chet is, as I know very well, he tells us he'll give us an evening. That gives us more than the usual time together. No one will be glancing at his watch to keep a business appointment, and the commuters can get late trains. The Technology Club can give us the quiet Governors Room for dinner and the talkfest afterward. Thirty-odd notices go to the 'regulars' who can be counted upon. Eight men came to dinner, and one dropped in for the evening. I can recall no such get-together except at the five-year reunions. Chet and John Willard were going back on the sleeper, and we stuck around almost as long as they could stay. I'm for having more of the occasional dinners. I think we'll all agree. Chet gave us late news of Cambridge, both at Harvard Square and on the banks of the Charles. As for Chet, he's fast making himself completely indispensable. I've only known Chet for a few months but I keep saying to him, 'Where have you been all my life?' Maybe Carl had an inspiration when he appointed Chet to the secretarial staff, knowing, no doubt, all the while about the direct line between the M.I.T. and the Harvard switchboards."

The roll call of the "dinner for eight" was as follows: Hardy Cook, VI, Jim Critchett, XIV, Chet Dawes, VI, Dale Ellis, XIV, George Gray, VI, Let King, IV, Johnny Willard, II, and Paul Wiswall, V. Larry Forrest, X, dropped in after dinner. Hardy, who used to be a lunging tackle on the old '09 football team, is one of the few, or perhaps is the only one in the Class, who has no gray hairs. He is still doing personnel work for the Brooklyn Edison Company. His son, Hastings, is in the Ordnance Department as a coordinator in the tank program in Detroit. Merrill, another son, is a technical sergeant in a maintenance battalion in an armored division.

Jim, who is vice-president of the electrometallurgical division of the Union Carbide and Carbon Corporation, states that his company will be making one-half the actual synthetic rubber production when the present program gets under way. — Dale is engaged in some technical work in the war effort at Stevens Institute of Technology. He has already started to sign up his crew for the contemplated cruise to Oyster Harbors in his 38-foot boat which leaves Port Washington about June 1, 1944. It is believed that Johnny Willard, Larry Forrest, and Lewis Nisbet have already signed on the dotted line. Dale is the author of a book, *Coast Guard Law Enforcement*, published by the Cornell Maritime Press. This book is listed in "The Technology Bookshelf" for 1942–1943. The Review Secretary has a copy of the book, and he recommends it to all boatmen.

1909 Continued

Larry Forrest is a chemical engineer with the American Cyanamid Company and is working on production problems. He lives near the top of the ridge of the Orange Mountains overlooking the whole Jersey Plain with the towers of New York in the background. Larry, Jr., 20, is a senior at Cornell, taking an electrical engineering option in a course corresponding to XV at M.I.T. The older son, Bob, 26, has a degree from Lehigh and is a first lieutenant and a pilot in the air force at Key Field, Meridian, Miss. Larry also has a daughter, Priscilla, who is 17.

George Gray is transmission engineer with the International Telephone and Telegraph Corporation. His son, Jack, was graduated from M.I.T. in 1940, having taken the Course in Business and Engineering Administration. After spending a year with the Detroit Steel Products Company, Jack joined the production control department of the International Telephone and Radio Manufacturing Company, which is a manufacturing subsidiary of I.T. and T. — Let King, with Singmaster and Breyer, is doing architectural-chemical work (see '09 notes in the January Review).

Johnny Willard is doing some expert consulting work in South Carolina and Tacoma, Wash., in connection with the use of the forests for wood pulp. He spends his time commuting between Boston, New York, South Carolina, and Tacoma, still works about 18 hours a day, and snatches a few winks of sleep on Pullmans. Johnny is now four times a grandpap and claims the class record. Does any classmate equal or beat Johnny's record? — Reg Jones, VI, had signed up for our New York party. The Review Secretary, however, happened to come into his office in the afternoon and heard him completing his cancellation of the dinner because of a rising temperature. (He had just returned from Washington.) Reg, Jr., is at Exeter and has another year there before entering college.

At the A.I.E.E. convention, the Review Secretary met Phil Chase, VI. In fact we both are serving on the Lamme Medal committee, which meets each year and awards to some electrical engineer a medal for "meritorious achievement" in the field of electrical engineering. Phil is chief engineer of the Philadelphia Electric Company, and he has made many notable contributions to power transmission and distribution. An important contribution he made is a low-voltage A.C. distribution network for the thickly settled districts of large cities. Such a network has been in successful operation in Philadelphia for several years. When asked as to what he is doing these days, Phil replied: "I spend a large part of my time devising ways and means of how not to do things and most of the remainder of my time in not doing them. I work overtime answering questions for government agencies and sit on the lid of a fairly empty pot without much steam pressure in it."

Johnny Willard and the Review Secretary certainly had two field days in succession, for after returning to Boston after the Wiswall dinner in New York, the two of us went to the Alumni Banquet at the Statler on Saturday night. The others present at the dinner were George Bowers, I, Tom Desmond, I, George Haynes, VII, Bob Hutchinson, III, Arthur Knipp, VI, Lew Nisbet, I, Ben Pepper, I, and Laurence Shaw, V. Bob, who was one of the speakers, of course graced the head table, but between the halves he came over to the '09 table and greeted us all. And that speech of his was well worth the trip that anyone made to hear it.

George Bowers is with the Federal Public Housing Authority in Lowell. Tom missed the New York dinner because he had to come to Boston and the following Monday he was slated to attend a meeting of the Institute Corporation. George Haynes is still in the advertising business. Arthur Knipp, after his harrowing experiences with the Japs (see the December Review) is teaching radio to Army and Navy officers at Harvard. Lew, from Portland in the good state of Maine, made, next to Tom, the longest trip to come to the banquet. He is normally a consulting engineer but at the present time is tied up with the War Production Board in the Portland district.

Ben, who is still in the insurance business, has a son, Ed, who was graduated from Technology in 1942, and, after being commissioned an ensign, spent four months at Cornell in the Navy indoctrination course. John, another son, is in his fourth year at Exeter.

We can always count on the two Shaws at alumni affairs. Art, who is a member of the Alumni Council, is still with Metcalf and Eddy (see the February Review). Laurence is still making rubber soles at Avon, Mass., and men's taps are about half the business. Henry is still grinding out supergrinders for the war program (see January Review) and has just sold one to Cy Young. — Bill Jones, III, and Steve Burgher, VI, each sent his regrets. Bill was ill, and Steve was in Maine. At both dinners it was the unanimous opinion that it shall be Oyster Harbors for our reunion in 1944, and your Secretary has already made the reservation.

Word of the death of Carl G. Koppitz at Greensburg, Pa., on January 6, has been received. According to the only information available in the class files, Carl had been employed since June 1, 1916, with the Railway and Industrial Engineering Company of Greensburg, Pa. He did not attend the Institute after his second year.

Last month, in writing to the Secretary, Leon Healy, V, consultant, chemist and engineer at Milwaukee, was so enamored with boats that he forgot that he had a family. He now writes again, but it's still boats first and family afterward: "It almost makes me a little homesick when you mention the good old ocean down New England way. There is nothing quite so nice for sailing or boating as the waters along the New England Coast. I spent many a happy hour along the Connecticut shore and Maine Coast. Mother and Dad still live in Connecticut, and, if I remember correctly, they will celebrate their 65th wedding anniversary next month.

"My daughter Virginia was graduated from the University of Wisconsin in January. That university is graduating students in both January and June and has cut out all vacations for the duration so it can speed up the courses for those taking military training. Virginia has accepted a position on the faculty of the Waukesha High School, one of the finest schools in the state. She specialized in home economics and was an honor student. Waukesha is 20 miles from here and is a college city. We are pleased to have her so near home. Muriel is a sophomore in Bay View High School, one of our large Milwaukee high schools. Jim is eleven and in junior high. He is a regular boy and takes to sailing like a duck to water. Just now he is having his fill of winter sports. There have been more snow and cold weather this year than for many a year.

"I hope that some year we can all attend one of the class reunions. Don't fail to look up a guy if you get out this way. Best wishes from your old classmate."

Paul wrote: "There was mention in the January Review of the passing of Professor Davis R. Dewey, founder of Course XV and a friend of 1909, since Brad Dewey is his son. I like to think of the lectures in Huntington Hall about 1907, when we all gathered, the whole 240 of us, to hear Professor Dewey's lectures on economics. The incident that sticks in my memory best was the dialogue between some hardy classmate, whose identity I have lost, and Professor Dewey. It was about the prices at Mac's. Why were they so high? You could go down on Tremont Street and buy all sorts of things at lower prices than Mac charged. Was Mac in business to get the best of us? At this distance, I think that very question had been asked many times before; certainly it must have come up every year. Dr. Dewey had the answer, too. If Mac saved you a carfare or two and one or two hours' time, maybe he was operating a benevolent institution for us, and we might not fully appreciate his efforts. The day, for the moment at least, was saved for Mac. And had we ever heard of 'place value'?

"I'm sure that Professor Dewey had all the answers to all our questions. He had not stood before so many classes in Huntington Hall for nothing. His greatest asset seemed to be his ability to let us down gently. He never seemed to rub it in on us. In fact, I used to think we got the best of him in some of our discussions: I thought so in 1907. But I don't now! Yes, he knew all the answers to our sophomoric questions.

"I used to see him at the five-year reunions. I never knew him well. The twinkle in his wise eyes had more sparkle as the years passed. Maybe there was just as much sparkle in those long-past days when we were undergraduates; maybe it was we who could not fully appreciate his delightful humor. Who knows? I've often thought in these latter

1909 Continued

years that Professor Dewey was perhaps the Institute's choicest ornament. Certainly the twinkle in the eyes of the photograph shown in The Review belonged to a man who leaves a warm spot in the hearts of thousands of Technology men, including the men in 1909, who are Brad's classmates. — PAUL M. WISWALL, *Secretary*, 90 Hillside Avenue, Glen Ridge, N.J. CHESTER L. DAWES, *Review Secretary*, Pierce Hall, Harvard University, Cambridge, Mass. *Assistant Secretaries:* MAURICE R. SCHARFF, 235 Second Street, Southeast, Washington, D.C.; GEORGE E. WALLIS, 1606 Hinman Avenue, Evanston, Ill.

1911

With spring imminent, romance steals the center of the '11 stage for these notes, with two January weddings to record. George Forristall, II, and Mrs. Renee Rideau Mayberry were married in Houston, Texas, on the 28th of January. They are at home at 1100 Southmore Avenue in that Texan city. A long life of health and happiness to you both!

Lois Carver Stevens, daughter of Don and Lois Stevens of Ridgewood, N.J., became Mrs. Robert Andrew Streett in Ridgewood on the 23d of January. The bride, given in marriage by her father, wore a gown of heavy old ivory silk faille, which had been worn by her grandmother and was a copy of the wedding dress of Mrs. Grover Cleveland. Dick Gould, XI, and his wife and C. R. Johnson, X, were at the wedding. The young couple honeymooned at Sky Top in the Pocono Mountains. That is, according to Don, "a very popular spot for honeymooners from this vicinity during these days of gas rationing and the difficulties with train travel."

Mrs. Streett was graduated from Wellesley College and was a teacher at Derby Academy, Hingham, Mass. Mr. Streett attended the University of Maryland, where he became a member of the Phi Delta Theta Fraternity, and at present he is connected with the Wright Aeronautical Corporation in Paterson. They are at home at 56 Hudson Street, Ridgewood Highlands, Waldwick, N.J. May you both live long and prosper!

Well, sir, we came within an ace of having eleven classmates at this year's Alumni Day Banquet at the Statler in Boston on January 30, with the following ten present: George Cumings, Dennie Denison, Roger Loud, and Bob Mather, VI; Joe Fuller, Jack Herlihy, and Tommie Haines, II; and F. C. Harrington, Walter Hildebrand, and O. W. Stewart, I. Curiously enough, there were also ten '11 members on this year's committee of Alumni Hosts, who collectively made it possible for all the members of the graduating class to be invited to attend. This list included four of those present at the affair: Denison, Fuller, Harrington, and Stewart; and Minot Dennett, II, of Detroit; Pete Gaillard, VI, of Washington; Don Stevens, II, who reports that the Okonite Company at its three plants is now busy on war work; Bill Warner, I, of Nowata, Okla.; Bun Wilson, XIV, of Pittsburgh; and Rufe Zimmerman, IX, of New York City.

It was great having Walter Hildebrand back — for the first time since 1911. Hildie is our candidate for the youngest looking '11 man. He came to Boston for the graduation of his oldest son, Walter, Jr., who received his S.B. in Business and Engineering Administration. A younger son, Bob, has just finished his freshman year at the Institute. Another "long-time-no-see" classmate was on from Windsor Locks, Conn., for the dinner — Bob Mather. He has retired, but with his wife he is active in civic affairs in that bustling Connecticut city.

Joe Fuller informed us that his son, Garett Fuller, formerly a flier with the Royal Canadian Air Force, is now a lieutenant in the United States Army Air Forces and is flying a fighter plane in England. — Larry Weeks, VI, is now a colonel and is stationed at Fortress Monroe. Ted Van Tassel, X, has been upped to major. Congratulations!

Additional honors for classmates: R. E. Zimmerman, IX, was re-elected president of the American Standards Association; and Marcus A. Grossmann, III, was given the Robert W. Hunt Award for 1943 at the annual banquet of the American Institute of Mining and Metallurgical Engineers. Both events took place in Big Town. Zim is a vice-president of the United States Steel Corporation, and Aurora Borealis is director of research of the Carnegie-Illinois Steel Corporation.

In his annual report to the A.S.A., Zim said that work in the past year, all of which has tied in closely with the war effort, had resulted in 73 new standards and 49 revisions of existing standards. He also stressed the fortunate and timely program developed during the past year on co-operative standardization work with the other American countries, with national standardizing bodies now in operation in Argentina, Brazil, and Uruguay, and one in the process of formation in Chile. "In all of the current activities of the A.S.A., regular and special," Zim concluded, "you will find a determined effort to lay firm foundations for the post-war period."

In its list of books published during the last three-quarters of 1942, "The Technology Bookshelf" includes *Drives Towards War*, Appleton-Century, 1942, by E. C. Tolman, XIV. Ed is professor of psychology at the University of California, Berkeley.

The third year of the Alumni Fund is completed. Official tabulations as of January 16 showed 1911 third among the 75 classes graduated from the Institute. Our 115 per cent of quota of contributors was surpassed only by the Class of 1891 with 127 per cent and 1877 with 120 per cent. Our 148 contributors — an advance of 9 over a year ago — averaged $12.43 per contribution, which figure stands second in the group of seven classes (1908–1914) with which we were affiliated while undergraduates. The Class of 1912 surpassed us with an average contribution of practically $17. We have progressively improved during the three Funds to date, but to each of you who read these notes I appeal: "Try to get another classmate to get on the band wagon in 1943–1944, so that 1911 can lead the field in subscribers to Alumni Fund IV."

In a stirring editorial comment, following the tragic announcement of James Pierce's untimely end in an airplane crash in mid-January, the Charleston, W. Va., *Gazette* said: "Coming here in 1914, three years after graduating from M.I.T., he was credited with technically developing and putting into operation Kanawha valley's first chemical industry after the salt furnaces of pioneer days. Before World War I he liked to tell local organizations that Charleston was the future chemical center of the world, but his predictions of what would happen (and since has happened) were looked upon here then as dreams.

"In addition to his presidency of Barium Reduction Corporation, which he founded, Pierce was an official and technical adviser in several manufacturing ventures, most all chemicals, and the consequent time he was forced to spend in travelling from one plant to another led him to seek faster transportation, by his own airplane. He was an 'angel' to the Charleston airport, reputedly going into his own purse to provide money for expenses for which no other funds were available."

Charlie Hobson, X, who since our 30-year reunion has been superintendent of Jim's plant at South Charleston, W. Va. wrote: "You will remember at the last reunion how well Jim looked and how much he had developed. He had reached the point down here where he occupied a very dominating position in the industry and, as far as this plant is concerned, it is difficult to imagine how his loss can be overcome. Surely his development was probably as great as that of any man in the Class." Truly we have lost an illustrious member of the Class.

One of the best features of my return to engineering practice by affiliating with the George S. May Company, New York and Chicago, is my meeting with classmates in my journeys. Recently I was lunching at the Turks Head Club in Providence when I ran into Ray Lord, VI, and Morell Mackenzie, II. Ray is an official of the Manufacturers Mutual Fire Insurance Company, while Mack was home on a visit from Dallas, Texas, where he has an engineering office at 410 Guardian Life Building. In Gardner in early February, I had a fine chat with Stan Hartshorn, X, furniture manufacturer, while I recently heard indirectly from Charlie Ashley, III, resident Vice-president of the Maryland Casualty Company, 107 William Street, New York City, when my son-in-law, Peter Barton, met him on a business trip.

Jim Greenan, III, whose success in tin mining was chronicled in last month's class notes, has changed his firm name to Greenan-Kerr, still maintaining offices in Room 303, 206 North Virginia Street, Reno, Nev. — Ralph Hanson, XIII-A, has been promoted to a captaincy in the Navy and is now located at 494 Spring

1911 Continued

Street, Northwest, Atlanta, Ga. — Other new addresses include: L. G. Fitzherbert, I, 59 Hundreds Circle, Wellesley Hills, Mass.; Charlie Hobson, X, 4909 Noyes Avenue, Southeast, Charleston, W. Va.; and Roy Van Alstine, I, 3940 Myrtle Avenue, Long Beach, Calif.

These notes will reach you in late March, about the time of the initial appeal of Alumni Fund IV. Please respond thereto promptly and generously and thus get 1911 off to a flying start! Thank you. — ORVILLE B. DENISON, *Secretary*, 82 Elm Street, Worcester, Mass. JOHN H. HERLIHY, *Assistant Secretary*, 588 Riverside Avenue, Medford, Mass.

1912

With so many of our Class now in the services or with sons and daughters serving our country, your Secretary would certainly appreciate a little information that could be shared with interested classmates.

In the latter part of December, your Secretary suffered the loss of his eldest son, who was just finishing training as a fighter pilot in the United States Marine Corps. My eldest daughter is now serving with the WAVES as an ensign in communications, while my youngest son is at the reserve officers' training school at the Coast Guard Academy, New London.

The Boston *Herald* recently carried an article on the oil situation by J. W. Connolly, I, who is now manager of fuel-oil sales for the Standard Oil Company of New Jersey. He was recently appointed chairman of the fuel-oil subcommittee of the petroleum industry by Harold L. Ickes.

We are pleased to note that H. Malcolm Priest, I, engineer with the United States Steel Corporation, 612 Frick Building, Pittsburgh, Pa., has just been awarded $2,700 by the James F. Lincoln Arc Welding Foundation for his contribution toward progress in arc welding.

The name of William Reynolds should have appeared in the January Review in the list of M.I.T. freshmen whose fathers are alumni, as he is the son of the late Charles V. Reynolds of our Class.

We have had a fine letter from Ralph M. Ferry, II, and although it was to some extent a purely personal communication, we guess Ralph won't object if we give you a few excerpts from it. "In the present circumstances," he writes, "it is pretty difficult to write a very newsy letter, because practically 100 per cent of one's activities are related to the demands of one's job. The Technology Club in Pittsburgh started out with a very interesting and well-attended meeting, at which Bernhard Ragner gave us a picture of the whys and wherefores in Paris just before it fell, based on his 20 years' experience there as a representative of the New York *Herald Tribune*. The next meeting was a flop — due partly to bad weather and partly to transportation restrictions, which have become rather severe. So our grand program which we had worked out last summer has gone by the board, although we hope to have one or two worth-while meetings before the year is over.

"Our situation here is somewhat similar to that in New York, in that people we have listed in the Pittsburgh area live all over the western part of the state, and our transportation facilities are not nearly so good as in the metropolitan district. I am not, however, too pessimistic. As I look around, I figure that many other people are having a much tougher time than we are having here, and if we can remain vertical and continue to do our part, then we will derive a considerable amount of satisfaction, which, in the present circumstances, is probably more important than a few picnics or other pastimes that appeared so important a few years ago." — We happen to know that Ralph is enjoying a very busy and very successful career as general manager of the plant of the Aluminum Company of America at New Kensington, Pa.

Every now and then we see or hear from R. J. Wiseman, VI. Doc seems to be continually traveling all over the United States in the interests of the Okonite Company, with which he has been connected these many years.

Joseph I. Taylor, XI, now carries the title of major and is located with a service command at Fort Hayes, Ohio. Richard C. Stickney is now a colonel at Camp Atterbury, Columbus, Ind. John S. Grant now rates as a lieutenant commander and is located at the Puget Sound Navy Yard, Bremerton, Wash. — FREDERICK J. SHEPARD, JR., *Secretary*, 125 Walnut Street, Watertown, Mass. DAVID J. MCGRATH, *Assistant Secretary*, McGraw-Hill Publishing Company, Inc., 330 West 42d Street, New York, N.Y.

1913

A total of 41 classmates came to Boston for our 30th reunion at the Hotel Statler: Nason, Weeks, Eichorn, Nelson, Cohen, Braude, Townsend, Pendleton, Fallon, Ready, Morton, Cushing, Louisa Norton, Gentner, Sage, Lovell, Charlie Thompson, White, Starr, Fessenden, Bonney, Cameron, Wardwell, Hurst, Bion Pierce, Mattson, Arthur Hirst, Haynes, A. L. Brown, MacKinnon, Hession, Carlson, Terry, Frank Mahoney, Capen, Wemple, Kenney, Glancy, Russell, Howie, and Murdock. Though not at all hilarious, the party was swell. There were no speeches, but Dave Nason did give us a scolding about the poor showing of 1913 in the Alumni Fund. On the spot we took subscriptions in sufficient amount to fill our quota. Dave's style is pungent, without being odious. Thank you, Dave, and the boys who dug in their pockets, to Larry Hart's delight. Larry has worked hard as the class agent. — During dinner we got this telegram from Ed Pratt, I, in Winnipeg, Manitoba: "For auld lang syne make this our banner service year." Nice thought, Ed, and in good taste. Thank you.

In addition to his duties with Chandler and Farquhar, Steve Braude is now running the old established S. A. Woods Machine Company, with plants at South Boston and Natick. This company makes woodworking machinery and motors. — Bob Weeks is still full of fire and the crusading spirit. During the Alumni Dinner, Bob spoke to several Institute officials on the subject of establishing an Ike Litchfield Scholarship, for which awards would be based both on students' good records in extracurricular affairs and on scholarship. Such a scholarship would be a recognition of Ike's fine work, and the basis of the award is an excellent idea.

Allison Butts, III, a professor at Lehigh University was on the 16-man jury which judged the papers in the $200,000 progress award program of the James F. Lincoln Arc Welding Foundation.

We have received the following new addresses: Colonel Alan H. Means, XII, 49 Floral Street, Arcadia, Calif.; Rear Admiral Edward H. Smith, XIV, 5 Wildwood Street, Winchester, Mass.; B. B. Tremere, Jr., III, 505 North Main Street, Palmer, Mass.; Captain D. H. Van Deusen, II, 2126 Connecticut Avenue, Washington, D.C.; Halsey Elwell, II, 26 Grotto Avenue, Providence, R.I.; W. F. Herbert, IV, 731 Pierce Street, Port Townsend, Wash. — FREDERICK D. MURDOCK, *Secretary*, Murdock Webbing Company, Box 784, Pawtucket, R.I.

1914

Alumni Day and commencement went off as predicted in these notes last month. As far as your Secretary knows, '14 still holds the record for having the largest total of sons graduated, based on the number of years since our own graduation. Of course we had the usual prandial meeting, where acquaintances were again renewed and several out-of-town classmates welcomed. Attending the Alumni Dinner were Crocker, Des-Granges, Fales, Gazarian, Devine, Atwood, Bert Hadley, Leigh Hall, Hamilton, Hanson, Hoyt, Mayo, Muzzey, Spitz, Storke, Tallman, Harold Wilkins, Swift (now a state senator for New Hampshire), our honorary members Doc Millard and William Jackson, and your Secretary. Because he had to maintain the decorum required of a head table guest, Alden Waitt did not join us until the dinner was well in hand. Neither Alden nor the Class paid the slightest attention to the fact that Alden, by virtue of his being a brigadier general, was the senior Army officer present. We had our usual enjoyable gathering. Pete Storke, a full colonel, as provost marshal for the First Service Command saw to it that all '14 men arrived back at their billets in good order.

Late, but none the less welcome, was the Christmas card from Luce Burnham. It was mailed from North Ireland on November 29 and, although allegedly traveling by air mail, it arrived on February 4. Burnham is a colonel with the Marine Corps.

As mentioned previously in these notes, Crocker and his synthetic smells have certainly made the headlines during the past weeks. He has been labeled, perhaps libeled, as a "professional user of a well-developed sense of smell," and "a scholarly gentleman, something of a cross between a kindly family physician and a college professor." Other descriptions

1914 Continued

have indicated that he has been able to make the public think they were buying rare spices when in fact they were only obtaining smells. But they saved points for the ration book, and that is something. — Hibbard Busby has abandoned the textile field for the duration and is an inspector of naval materials at Dallas.

We have not been able to get a word out of Bob Moorhouse since he bought a farm out in Ohio, but his wife Dorothy wrote Ross Dickson about it, and the letter is just too good to keep. This is what she says about Moorlind Farm: "Since Bob never has a spare moment, I'm taking it upon myself to post you up a bit. Anent our new address, we run a dairy farm. We bought 106 acres. The house is 100 years old, but it is fully modern as to electricity, and so on, and we redecorated it. We have another house for hired help, of which we have one man and his family.

"I manage the farm. Bob is superintendent of Goodyear's government synthetic rubber plant. We have 21 head of Holstein cattle, 30 hogs, and 200 chickens, and we ship on the average 3,000 pounds of milk per month. Yes, Bob can milk cows! We all learned, but we have a milking machine, however. We have gone primitive. We have 25 acres of woods — hickory, walnut, oak, and so on — and I ride my horse every day the weather permits. I never worked so hard in my life, but I love it. Imagine it — born in London, England, raised in New York and Philadelphia, eight years in office work — and last summer I drove the team and harrowed a field! Of course I've ridden horses for 20 years, at least, so that helps. Bob is crazy about it; he talked me into it. Our boys help too in the summer. When you recover your breath, send us a line or two."

Leicester Hamilton has joined the ranks of "twice a grandfather." A second granddaughter, Holly Stevens, was born on December 29. Leicester is plenty busy with his Institute work right now. Besides being Acting Head of the Chemistry Department, he is chairman of the Dormitory Board. With the government making continuous demands in connection with the Army and Navy training programs, the housing program for regular students is a real problem. — H. B. RICHMOND, *Secretary*, General Radio Company, 30 State Street, Cambridge, Mass. CHARLES P. FISKE, *Assistant Secretary*, 1775 Broadway, New York, N.Y.

1915

When you are reading this, the third year of the Alumni Fund will have closed. You will all be pleased to know that as of March 8 the Class contributed $2,555.50, or 86 per cent of its quota of $2,970; this came from 147 men, 83.5 per cent of its quota of 176. As The Review goes only to those who contributed, you chaps reading this are the ones who made this brilliant achievement possible. It is a substantial increase over our totals of last year and is exceeded on the per cent quota basis by two classes in all the classes since 1897. My praise and my thanks to you all for your splendid loyalty and generous spirit. — Now let's take a shot at 100 per cent for 1943–1944. Everybody give at least the $15 average, or more if you gave it last year and can afford it again this year.

You will doubtless recall Jerry Coldwell's glowing account of the huge Army Ordnance plant his firm, Ford, Bacon and Davis, built at Jacksonville, Ark. Not only is it completed and operating, but on February 3 it was awarded the Army-Navy "E" for high achievement in production of war materials. Jerry sent me the plant newspaper and souvenir program of the event. The program carried a splendid picture of Jerry as vice-president and described his part in the ceremony. — Not to be outdone, Herb Anderson's plant, the Fidelity Machine Company of Philadelphia, was awarded the Army-Navy "E" on February 20. Good old Herb sent me an invitation and program with a clipping from one of the Philadelphia newspapers showing a good-looking picture of himself and giving the write-up of events. — Congratulations to Jerry and Herb for their part in achieving these distinctive awards.

At the 1915 table at the annual Alumni Banquet in the Hotel Statler, Boston, on January 30, the following were present: S. S. Eisenberg, H. C. Sheils, A. E. B. Hall, M. B. Dalton, H. D. Swift, H. W. Lamson, A. W. Mack, F. P. Scully, C. L. Hall, W. F. Pike, and A. S. Morrison. It was a jolly group, and we all enjoyed the evening together very much.

Sam Eisenberg made his first appearance since undergraduate days, and I am sure he will be converted to regular attendance at class affairs. His son was in the 1943 graduating Class and went immediately into the Navy.

From one of the recent Boston papers we quote: "Edwin B. Goodell, Jr., of Brookline, an architect, has been appointed assistant regional director of the First Civilian Defense Area, Joseph M. Loughlin, director, said. . . .

Goodell, vice-president of the Boston Society of Architects, is a graduate of Massachusetts Institute of Technology. A native of Montclair, N.J., he is married and the father of five children. He served in the world war as a naval ensign and has been attached to the regional civilian defense office since last May as administrative officer. He has specialized in aerial bombardment protection and is an air raid warden." — Congratulations to Gabby, whose experience should fit him well for this important position.

How could anyone who was at our 25th reunion at Oyster Harbors forget Larry Quirk? He comes to light and life now with a letter to Henry Sheils, from which I quote: "I have been waiting daily to hear that you had returned to service as a commander. How are you and all the Sheils? Our son, Bill, was drafted recently after having been turned down by the Navy, as he weighs 106 pounds. He is now at Atlantic City in some Air Forces school. Lou, 18 years old, tried to enlist but was refused; then he volunteered to get in with Bill. Two days before reporting, he had an emergency appendix operation, but he is now doing all right and should be in the Army in about two months. I still am on the gravy train working for the city of Middletown, Conn. The Republicans got in at the last election, but engineers are scarce, so enough said. Private business is good, too, so I have no complaint." — It is good to hear from Larry, and I hope he will continue his class contacts.

That's all for this month. Send your Alumni Fund check early! Make it big! And "help Azel." — AZEL W. MACK, *Secretary*, 40 St. Paul Street, Brookline, Mass.

1916

Classmates may address Frank Hastie, now a lieutenant colonel in the Army, as follows: Division Engineer, A.P.O. 834, care of Postmaster, New Orleans, La. I quote from his letter of January 27: "I saw George Kittredge about a week ago and I. B. McDaniel back in December. Both looked very well. I think Mac looks more like the McDaniel of 1916 than either George or I look like our 1916 selves. Haven't seen Al Lieber since I left Washington about a year ago.

"I went to Washington in July, 1940, as a civilian engineer in the office of the chief of engineers and remained there working on typical theater-of-operations design, including a technical manual, until October, 1941, when I came back into active service in the office of the chief of staff, G4 section. A year ago I came down here, and until October last was concerned with the review of requests for authorization of emergency construction in this area. I found this work very interesting in the application of the principles of theater-of-operations construction (specifically, economy of material, transportation, and labor) to the needs of the using agencies.

"Since October, I have been concerned with general review of design and inspection of construction within an engineer division, and I also have been supervising generally the operations of our camouflage, safety, and statistical groups, as well as censoring the division paper. Since this screed will in all probability never reach the boss's notice, I will state here that I yield to no one in having an extremely good boss and very good assistants, so that all I have to do is chew my food carefully and keep the other people in the division acquainted with what I am doing and vice versa.

"My eldest son is now in the present plebe class at West Point, after having been a cadet in the Coast Guard Academy for about a week, and my daughter is at Pembroke as a freshman. My three other sons are in high school, junior high, and grade school respectively. I get my exercise in the form of tennis and bowling and will be very happy to engage in those sports or in bridge or poker with any visiting firemen."

Lew Pratt, who was with us at our Oyster Harbors reunion in 1941, is now vice-president of the Rudel Machinery Company, Inc., at 100 East 42d Street,

1916 Continued

New York City. He and some former associates in the machine-tool business formed the new company late last year.

Those who attended summer camp in East Machias, Maine, in 1914 will remember Gordon M. Fair, now professor of sanitary engineering at Harvard. He has recently been appointed a member of the War Manpower Commission to enlist the services of sanitary engineers for the Army, Navy, and the United States Public Health Service. Gordon's address is 7 Scott Street, Cambridge, Mass. — JAMES A. BURBANK, *Secretary*, The Travelers Insurance Company, Hartford, Conn. STEVEN R. BERKE, *Associate Secretary*, Coleman Brothers Corporation, 245 State Street, Boston, Mass.

1917

Among those present at the recent Alumni Dinner were Blanchard, Cochrane, Dickson, Gartner, Gurney, Rausch, Beaver, O'Brien, Kenneth Bell, Strout, Ray Stevens, Lobdell, and Bernard, who is doing his annual chore of writing these notes. If any names, either living or dead, have been omitted, it is not intentional but impurely coincidental. As a test of the state of inebriation, each of those present was asked if it were worth 50 cents to have his name appear in this issue of The Review. Five of them thought so. Needless to say, Lobdell and Stevens did not contribute. The next morning my conscience bothered me a little, and I have forwarded the $2.50 to Horace Ford with the request that it be added to the 1917 Scholarship Fund.

Those of you who have seen the recent publication of Army Ordnance entitled *Battlenecks* have probably noticed one of the outstanding typographical errors of all time. Among those cited for distinguished service is one C. M. Roberts, a lieutenant colonel. This name did not register until we looked at the picture which accompanied the citation and there, sure enough, was the ex-manager of the 1917 Tech Show. To see Claudius' name without the full C-H-M regalia of initials was like apple pie without the proverbial cheese.

The citation reads: "This redesign affected three critical situations — Aluminum, Die Casting and Screw Machines. All three of these Battlenecks were widened by designing this 81-mm. Mortar Shell Tail Fin to be made from drawn steel cups and formed steel stampings, instead of from cast Aluminum with a machined steel core. When our present procurement of the Tail Fins is completed, there will be Aluminum saved for 100 Four Motored Bombers."

Our congratulations to Claude and also to Walt Beadle, who, as announced in the March Review, is the second member of 1917 to become a term member of the Institute Corporation.

There was an interesting article in a recent issue of the *Saturday Evening Post* about Bill Sullivan's job of raising the *Normandie*. The article was illustrated with colored pictures. Bill, who is now a captain, is on foreign service, as indicated by the following, which appeared in the New York *Times* around the first of March: "Captain W. A. Sullivan, United States Navy salvage chief, known to New Yorkers for his work on the *Normandie*, of which he has said: 'Hell, yes! We'll raise her,' was . . . reported in Morocco. Flown there in mid-November to take charge of salvaging French ships sunk during the invasion, he and his diving crew have (1) refloated the battleship Jean Bart at Casablanca; (2) raised most of the twelve merchantmen sunk at Port Lyautey; (3) have started scrapping others."

We must admire Dud Bell for his perseverance; he is still writing plays. He advises that he is now working on the manuscripts of two potential Broadway hits, "The Smug Life" and "Shell-Shocked Dad." He draws his characters from certain members of the Class of 1917, and the results are supposed to give a rather comprehensive composite picture of the faults, virtues, and what have you of some of our illustrious members.

Paul Gardner is a major in the Services of Supply. He is stationed at Fort Meade, Md. Bob Moulton is doing important work in line with his job with the National Fire Protection Association. He is frequently called as a consultant by the Army, the War Production Board, and other government agencies. Dex Tutein is with the Office of Price Administration in Washington. Tom Meloy is vice-president and general manager of the Columbia Machine Works of Brooklyn, N.Y. Ken Richmond has been elected treasurer of Abraham and Straus, Inc. Burling Wells received one of the prizes in the progress award program of the James F. Lincoln Arc Welding Foundation.

Win McNeill is continuing his Cook's tour of the chemical industry. His latest stop is at General Aniline and Film Corporation of New York City, with the job of executive accountant and vice-president. En route he made a forced stop at the office of the Alien Property Custodian in Washington. He writes: "As soon as I have some sample films, camera, or dyes sent to my office, I'll try to find something appropriate for the Dean's Office." May we respectfully suggest that some concoction which would make the Dean's hair grow out to a respectable length would not be out of order. — RAYMOND STEVENS, *Secretary*, 30 Memorial Drive, Cambridge, Mass. PHILIP E. HULBURD, *Assistant Secretary*, Phillips Exeter Academy, Exeter, N.H.

1918

Alumni Day and our 25th anniversary have come and gone. We did have a turnout of 15 members of the Class, but we had hoped for more than that. Those present were Chink Watt, Al Howard, Paul Howard, Johnnie Clarkson, Sax Fletcher, Pete Sanger, Carlton Tucker, Jack Hanley, Tom Kelly, F. Alexander Magoun, Ken Reid, Bill Wills, Gren Hancock, Tim Kiley, and your Secretary. Ken Reid had come over from New York to be the Class Day speaker. He was suffering from a very bad cold, and we sincerely hope that it didn't turn into anything more severe. Ken, let us know how you are.

Just before Alumni Day, I received a letter with a Mexican postmark, and when I opened it I found it was from Major Palmer Giles. The letter reads as follows: "It has been very interesting to read the news in The Review, and I feel that I should contribute news about myself so that I will be doing something to help you fill the column. [Thank you very much, wish more would do likewise. — *Secretary*.]

"It is a pleasure in a way to be stationed here in Mexico City on various tasks in connection with the Mexican War Department and the United States War Department. For the benefit of those of you who have never been to Mexico City, let me say that I sleep under three blankets in January and under two blankets in August. This is a health resort. It is never very cold and never very hot here. Mexico City has an altitude of 7,434 feet above sea level and has a population of almost two million.

"Any time of year if you want to play with snowballs and roll in the snow, all you have to do is go up to the snow-capped volcanoes near by. If, however, any time of the year you want to go swimming and get sunburned, all you have to do is to go down to the tropical coasts over a week end and bathe to your heart's content. You can pick coconuts and bananas right off the trees. If, however, you want to live in a climate of perpetual springtime, you can find plenty to amuse yourself right in Mexico City.

"We have plenty of everything to eat here, as nothing is rationed yet. You can buy a big steak dinner with all the trimmings for only 40 cents. The exchange is 4.85 Mexican pesos for one United States dollar. Mrs. Giles, my daughter Joy, age 10 years, and I have been stationed here for the past 20 months, and we have all enjoyed our work here. My eldest son, Alfred, enlisted in the Royal Canadian Air Force in June, 1941, after finishing his junior year studying petroleum engineering at the University of Texas. He was commissioned a pilot officer in April, 1942, and has lately been promoted to flying officer. He has been an instructor in advanced flying since last April. My youngest son, Geoffrey, also finished his junior year at the University of Texas last June and is now a buck private in the Signal Corps of the United States Army. So you see the Giles family have three in the armed services — 100 per cent.

"My daughter wants to be an Army nurse, but I keep telling her that she is too young. While down here, she has learned a great number of Mexican regional dances and has secured the costumes and dresses that go with each dance. Boy, you ought to see her strut her stuff.

"Tell my wrestling friends that I am still boxing and wrestling a little, trying to keep my waistline within reasonable bounds, but I weigh too much (90 kilograms). I drink too many liters of milk down here, and I do not do enough kilometers of road work.

1918 Continued

"I still own my ranch in Texas and am looking forward to living there for a while after this war is over, before I get back into the oil business again. If any of you classmates pass through Mexico City on the way to Africa, be sure to look me up at the embassy." — Thank you, Major Giles. We hope that this will be an incentive for some others that are in the far corners of the world to drop us a line and pass on what news they have. How do they expect us to know what they are doing if they do not let us know?

We now turn to Jack Hanley's additions for this month: I had a brief note from Bob Collier shortly after Christmas, which will be surprising and I think reassuring to many of us eastern oil users. Bob wrote: "I have been rather preoccupied with the handling of the distribution of petroleum products throughout the United States for the petroleum administrator in Washington. Best regards to all the boys you may see." Bob is located in 4527 New Interior Building, Washington. When last I heard from Bob, he was vice-president of the Great Lakes Carbon Corporation, with his headquarters at the Wilmington, Calif., plant. It should be fun to get Bob up to Weekapaug in June. Many of us will by that time be delighted to take a "friendly" (?) poke at him about oil allocation.

Win Caird finally crashed through with a "note for publication" and some personal comments. The note is as follows: "I am married and have one daughter. I am associated with Fay, Spofford and Thorndike. We are living in the country and burning oil when available [Bob Collier please note]. We have a car but no gas. I am an air raid warden. I vote the Republican ticket [didn't know there were any left], and wish I were young again." Win mentioned in the personal part of his letter that his daughter was in high school and has no special enthusiasm for mathematics, so probably won't lean toward engineering. He also mentioned working with Frank Moran for the American Oil Company for four years during the early 1930's. Has anyone heard from Frank? Win's address is 147 Park Street, Braintree, Mass.

Here are Jack's views about Alumni Day: I presume you will have a write-up on the group who turned out for Alumni Day. It was so small, it was pitiful. The Class of 1913 (30 years out) had 35 at the dinner. Ken Reid was asking for Walter Biggar during the predinner get-together in Room 402 of the Hotel Statler. I noted that Walter's address as given to me by President Magoun last year was Springfield, Mass. Can it be that Walter has forsaken the northern Vermont farm life he was enjoying so much at the time of our 20th reunion? Tom Kelly deserves a bouquet or something for his efforts in arranging a reception room for 1918 on Alumni Day, January 30. He also contributed more than his share toward its cost, so those present told him he would not be allowed to buy a drink at our 25th reunion. All free drinks to Tom! This is a notice to all our reunion hosts, including Ralph Mahony and Mique Flett.

Jack has made reference to Weekapaug for next June. Plans are under way for our regular week end at Weekapaug on June 18, 19, and 20. The new inn is very nice, and Mr. Geandi is ready and willing to do all he can to make us happy and comfortable. You will have to take a taxi from Westerly, but filling a taxi with a group will make it very inexpensive. The rates at the inn are only slightly, very slightly, higher than we have paid the other times we were there. We do hope that many will begin making their plans now so that they can be with us at that time. It would be fun if some of our servicemen could be on leave at that time and could join us. Let's hope that it can be done.

I am not trying to list our men who are in service or their ranks, as the Alumni Office can do a better job on that than I can. As the lists are published every month in the M.I.T. Men at War section, you can keep yourself posted. — Come, fellows, do send me news once in a while. — GRETCHEN A. PALMER, *Secretary*, The Thomas School, The Wilson Road, Rowayton, Conn.

1919

Our 25-year-reunion announcement resulted in a 5 per cent return in one month. Those who have not filled in their biographies or sent in their war bonds are urged to do so promptly. Most of the Class who have been contacted are favorable to the proposed plans, as illustrated by the following letter received from George Michelson: "You deserve a lot of credit and commendation for taking time in these days to go ahead with plans for a 25th reunion. The least the rest of us can do is assist. As soon as I can get a picture, I shall return the biography. You can also count on me for the suggested class gift, which certainly is an excellent idea. Anything you and your committee decide about the reunion will be satisfactory to me. Please give my best regards to the boys, and I shall try to look you up when I am in New York." — George is with J. Slotnik Company, building contractors, 38 Newbury Street, Boston, Mass.

On January 28, Arthur D. Little, Inc., released a statement of their new officers elected. Earl P. Stevenson was re-elected president. — Your Secretary talked to Jimmy Rice in Los Angeles the last week of January. He is now working for the Northrup Aircraft Corporation and wants to be remembered to all the boys. — Bill Banks was in my office early in February and is very busy on war work in the manufacture of mica insulation for electrical equipment. He saw Bob Hackett, Art Griffin, and Al Richards recently.

Word was received from Donald W. Kitchin. He had pneumonia and was in the hospital for several weeks but is all right now. His oldest son, Donald W. Kitchin, Jr., is a lieutenant in the Naval Reserve and was married at Charleston, S.C., on January 11. Robert M. Kitchin is an aviation cadet in the Naval Reserve, and Charles is a private first class in the Military Police escort guard company at Camp Shelby, Miss. Don's wife is a nurses' aide. Don attended the National Research Council meeting at Williamsburg last year. The Kitchins are in favor of a mixed reunion. Their home address is 50 Hastings Street, Wellesley Hills, Mass.

George F. Magraw, Box 43, Norfolk, Mass., is principal officer in the State Prison colony. — John P. Putnam, 535 Beacon Street, Boston, Mass., is employed as an engineer by the Reece Buttonhole Machine Company of Boston. He is now working on miscellaneous aircraft instruments. His hobby is flying.

M. A. Michaels writes from 180 Walnut Street, Montclair, N.J., that he is running a plant doing 100 per cent war work and is unusually busy. Stuart J. Hayes's new address is 52 Willow Street, Wollaston, Mass. Carlos Krebs is residing at 39 Moraine Street, Jamaica Plain, Mass.

The address of Robert R. Litehiser, a lieutenant colonel, is 510 Grant Avenue, Fort Leavenworth, Kansas. Ray Powers' new address is 885 Centra Costa Avenue, Berkeley, Calif. Dean K. Webster has moved from Methuen, Mass., to Sunset Rock Road, Andover, Mass.

Adolf L. Muller resides at 480 First Street, Brooklyn, N.Y. His business address is 286 Fifth Avenue, New York City. He is vice-president and director of Halsey, McCormack and Helmer, Inc., and is doing war plants for the Defense Plant Corporation. He is married and has a daughter, age 16. — Robert B. MacMullin can be addressed temporarily at Box 583, Lake Charles, La., where he has just been active in a new magnesium and chlorine plant. He is assistant director of research and development for the Mathieson Alkali Works. Bob is married and has two daughters, 18 and 15, and one son, age 8.

Louis A. Brown, Jr., whose home address is 3629 San Pasqual Street, Chapman Woods, Pasadena, Calif., is first vice-president of Lights, Inc., 1111 South Fremont Avenue, Alhambra, Calif. He is married and has a boy, 21 years of age, who is an aviation cadet in the Army Air Forces, and a daughter, who is four years of age. — Charles W. Hyde, 748 Millbrook Lane, Haverford, Pa., is with Day and Zimmermann, Inc., consulting engineers, and is currently trouble shooting in various war plants. Charles has a son, Junior, who is at present in the Marine Corps on foreign soil, and three daughters, ages six, four and a half, and three.

Marshall C. Balfour, M.D., is in Delhi, India, where he is regional director in the Far East for all Rockefeller Foundation work. He has two daughters, one a freshman at Swarthmore College and the other a senior at Northfield Seminary. Jack Fleckenstein, 419 Union Street, Ionia, Mich., is vice-president in charge of sales for the Crystal Refining Company, Carson City, Mich. He has two daughters, ages 13 and 11.

Dutch Seifert is with the American Chemical Service, 95 Industrial Road, Hammond, Ind. Mrs. E. W. Hill writes that her husband is a general and has been overseas since July 4. — Al Richards

1919 Continued

writes: "I want to compliment you on what a swell job you have done in getting the 25-year reunion notice out at this time." He writes further that he will be in New York soon and will drop in.

Bernard S. Coleman, Secretary of the tuberculosis committee with the New York Tuberculosis and Health Association, 386 Fourth Avenue, New York City, writes: "I placed my order for the $25 bond with the Federal Reserve Bank, and the bond should be forthcoming soon." Bernard has two sons, 16 and 13. He is president of the Weequahic Adult Education School, district chairman of the Robert Treat Council, Boy Scouts of America, and a member of the board of directors of the Community Vocational Service.

Walter F. Walworth, 34 Fairview Avenue, Arlington, Mass., has four children — three boys, 18, 16, and 10 respectively, and one girl, 11. His oldest son is at Boston University in the Army Air Corps meteorology training service, while his next son will enter M.I.T. in June. Walter is a master of the Roxbury Memorial High School.

Ed Deacon, President of the Climax Engineering Company, Clinton, Iowa, writes in to say that he pledges his bonds for 1943 and 1944. He also enclosed his biography. Ed has two children, one daughter who is a graduate of Briarcliff Junior College and is married to Donald V. Bennett, captain of an armored field artillery unit on foreign duty. His son, Edward, Jr., is a graduate of the Texas Country Day School of Dallas, Texas, and is now a cadet at the United States Military Academy. Besides being president and general manager of the Climax Engineering Company, Ed is secretary and director of the Internal Combustion Engine Institute and a director of the Clinton Coliseum, Inc., as well as a director of the Clinton Chamber of Commerce. Ed does some fishing and hunting in his spare time.

Frederick Carroll Spooner, Lincoln, Mass., is head of his own concern, the Spooner System, Inc., which is a sales organization of hosiery and underwear. His son, David, is 15. — William R. Osgood, 6301 Brookville Road, Chevy Chase, Md., is materials engineer with the National Bureau of Standards. He is author of a dozen or more papers in the technical press. — Willis C. Brown, 261 Hawaii Avenue, Washington, D.C., is a special representative of the United States Office of Education working on vocational training for war production workers. His hobbies are aviation and radio as well as photography and sailboat racing. Willis has two sons, 22 and 20, and a daughter, 16. His older son is an electrical engineer, and the other boy is in the Army.

Mrs. David P. Minard writes in from 106 East John Street, Champaign, Ill., that her husband died on April 6, 1942. He had held various positions in the engineering staffs of both Swift and Armour companies in Chicago. He sold his first car-refrigeration invention in 1935 to Armour and his second car-refrigeration invention to them in 1940. He held a commission as a captain in the 8th United States Cavalry during World War I. He married Elsa Dratz, Muskegon, Mich., in July, 1917, and they have two sons, 22 and 19. The older is a cadet in the Naval Reserve, and his younger son is a sophomore majoring in geology at the University of Illinois.

George A. A. Morse, City Hall, Newton Center, Mass., is assistant engineer in the city of Newton engineering department. He has a son, ten, and a daughter, six. — John P. Comstock, 18 Maple Avenue, Newport News, Va., is now assistant naval architect at the Newport News Shipbuilding and Dry Dock Company. He is the author of *Introduction to Naval Architecture*, Simmons-Boardman Publishing Corporation, 1942, and coauthor of *Principles of Naval Architecture*, 1939, as well as a paper, "Effect of Size of Tank on Model Resistance," *Transactions of the Society of Naval Architects and Marine Engineers*, 1942. John has three children, two girls, 24 and 14, and one son, 22.

Leslie A. Jackson, 1600 Gaines Street, Little Rock, Ark., is manager of the Little Rock Municipal Water Works. He has two daughters, ages 17 and 13. — James R. Moore, 202 President Avenue, Providence, R. I., is in business for himself as a cotton-yarn broker. He has two daughters, Margot, 20, who graduated from Lasell Junior College and is now employed at Brown University, and Pamela, 18, who is a student at Simmons College. — Edward G. Moody, 9 Pine Road, Lynn, Mass., is treasurer of Edward G. Moody, Inc., 68 Brookline Avenue, Boston, Mass., developing petroleum-delivery equipment. He has several patents on elimination of air from oil.

Don't forget to mail in your biography questionnaire, your recent snapshot, and your bond made out to M.I.T. Class 1919 Fund. — EUGENE R. SMOLEY, *Secretary*, The Lummus Company, 420 Lexington Avenue, New York, N.Y. GEORGE W. MCCREERY, *Assistant Secretary*, 131 Clarendon Street, Boston, Mass.

1920

Considering the times, the Class was pretty well represented at the Alumni Dinner, January 30. Your Secretary got into a little advance celebrating with some of the boys and so arrived at the banquet hall a little late. He therefore may have overlooked some of the '20 men present. Those he can account for include the Alumni Association's Vice-president, Ed Ryer, and Al Burke, Scott Carpenter, Foster Doane, Ernie Whitehead, Al Fraser, Ed Burdell, Wilford Hooper, Dan Lord, Bat Thresher, John Mitsch, James Moir, and Scott Wells. All of those present will agree that it was a heart-warming affair, and we are sorry for those of you who couldn't make it. We should have liked to see you.

Louis Bender is a colonel in the Signal Corps. Rolland Case is a colonel stationed at the San Antonio Arsenal. Austin Higgins has been promoted from lieutenant colonel to colonel, and his home address is 255 Drake Avenue, New Rochelle, N.Y. Morris Lipp is a captain of the Army Engineers. He is still in Florida. Al Wason is a major. He is with the Army administration school at Brookings, S.D.

Ed Van Deusen gives his present address as University Club of Los Angeles. Fred Pelton is with the Association of Motion Picture Producers, also in Los Angeles. Ted Sullivan has joined the staff of Foster D. Snell, Inc., Brooklyn, N.Y. He will be research director of the rubber and plastic department. He has been a rubber expert for a number of years. — HAROLD BUGBEE, *Secretary*, 7 Dartmouth Street, Winchester, Mass.

1921

Technology's wartime Alumni Day on January 30 was stripped to its barest essentials, but it was, nonetheless, the enthusiastic and enjoyable occasion which the annual celebration has come to be. Your Assistant Secretary ran into Mel Jenney, VI, in the afternoon, and together we attended the Class Day program in the spacious New England Mutual Hall on the site of the old Tech on Boylston Street. Present at the Stein-on-the-Table Banquet that evening at the Statler were Mich Bawden, Josh Crosby, Chick Dube, Al Kiley, Chick Kurth, Leo Mann, Don Morse, Warrie Norton, Charlie O'Donnell, Lark Randall, Slide Rule, John Sherman, and Cac Clarke. Representing the Class among those in the services who sent telegrams in keeping with the military atmosphere of the dinner were Richard Donovan, a major general, and Howard L. Vickery, XIII-A, a rear admiral. Josh Crosby served as a member of the dinner committee. The following deserve thanks as members of the Committee of Alumni Hosts, who helped make it possible to have the entire graduating Class present: Ed Farrand, Victor Homerberg, Irv Jakobson, Al Kiley, Frank Kittredge, Leo Mann, Warrie Norton, Tom Proctor, Lark Randall, and Al Wechsler.

John M. Sherman, X, told us that since last October he has been with the Federal Reserve Bank of Boston, organizing a new program of regional economic research. He still makes his home at 18 Edward Street, Belmont, Mass. — John T. Rule, XV, Associate Professor of Graphics at the Institute, has been lent for the duration to the Polaroid Corporation. — Larcom Randall, VI, is also with Polaroid as technical editor. — Garvin Bawden, XV, styles himself "just another opiate," but we hasten to add that the pun refers to his activities with the Office of Price Administration. — Edouard N. Dube, I, is with the Haller Engineering Associates, Inc., of Reading, Mass.

Ernest R. Gordon, III, and Richard Lee, III, have returned from mining activities in distant lands. Charlie Locke, '96, Alumni Secretary, writes that Ernie is now superintendent of the Aurora-Xichu Unit, Cia Minera Asarco, Matamoras 9, San Luis de la Paz, Guanajuato, Mexico. He returned to the United States last fall from the Gold Coast, where he had been for the past year as general manager of Gold Coast Banket Areas, Ltd., and South Banket Areas, Ltd., each

1921 Continued

of which produced about 11,000 tons of gold ore a month. Dick has journeyed north from Puerto Cabezas, Nicaragua, and is now located at 244 32d Avenue, San Francisco, Calif.

Richard Donovan, major general, chief of the Eighth Service Command, spoke at a recent Tulsa, Okla., civilian defense dinner, according to a newspaper account, and received an orchid corsage! A Red Cross motor corps captain sent it because she couldn't attend. The general accepted and said he would send it to his wife in Dallas. — James B. Ford, III, President of the James B. Ford Company of Palos Verdes, Calif., received an award in the progress award program of the James F. Lincoln Arc Welding Foundation.

Philip T. Coffin, VI-A, general superintendent of the new Queens plant of the Aluminum Company of America, delivered an illustrated lecture on the production of aluminum, to the power section of the American Institute of Electrical Engineers in New York. The meeting was well attended. Among those in the audience were George Chutter, VI-A, Sumner Hayward, X, Ralph Gilbert '19, VI-A, and your Assistant Secretary. Several reels of sound pictures rounded out Phil's comprehensive treatment of the subject. Erstwhile freshmen with an insatiable desire for the acquisition of prestige through literary kidnaping of celebrities, will find invalid any claims to the prior art.

Paul N. Anderson, IX-B, is the recipient of our apologies for not having listed his son, Paul N., Jr., '45, in last month's reference to class sons at the Institute. The sons of five members of the Class are now undergraduates, and one boy has completed his graduate work as a member of the armed forces.

Jackson W. Kendall, XV, broke a long silence with an attractive notice of his move from Pasadena to the Richmond, Va., headquarters of the antiaircraft command in which he is a major and automotive officer. Marge, Jack, Jack, Jr., and Robert piled into the ancestral gas chariot last September, two months after Jack had been called for active duty at Camp Callan. They followed the southern route across the country to Richmond, where the family now lives at 3102 Horncliff Road. Jack is on leave from his managership of the Bekins Van Lines of Los Angeles.

Statistics of those in service now show over 12 per cent of our 890 members, represented by 108 men, are in the armed forces; 79 are in the Army and 29 in the Navy. Dr. Compton's figures at Alumni Day indicated 37 generals among M.I.T. Alumni. Two major generals and five brigadier generals, or almost a fifth of the total number, are members of our Class. In the Navy, we list one rear admiral of the 14 admirals among all M.I.T. Alumni. As previously reported, one member of the Class has been killed in action, one is missing in action, and one has died in service.

Franklin O. Carroll has been promoted from colonel to brigadier general. He is chief of the experimental engineering section at Wright Field. New colonels include Gerald A. Counts, I, and LeRoy M. Hersum, I. Asher Z. Cohen, X, and Dugald C. Jackson, Jr., VI-A, have been promoted from majors to lieutenant colonels, and Frederick S. Dellenbaugh, Jr., VI, has been commissioned a lieutenant colonel. Boyd W. Bartlett, I, and Robert A. Hill, I, have been made majors; John D. Crowley, II, is a captain, and Allen D. Addicks, X, is a lieutenant.

Your Assistant Secretary had the pleasure of visiting a former associate, Harry E. Thomas '25, at the RCA, Victor division, Camden, N.J., and giving a talk on selenium rectifiers to Harry's radio and electronics class, which is run jointly by Temple University and RCA, under the government's technical training program. We were unable to locate Bob Felsenthal, X, who is in RCA's purchasing department.

Just as these notes were being completed, the following letter from John M. Sherman, X, brought word of the loss of one of our active members: "I am writing you to bring the sad news of the death of Oscar Frederic Neitzke, X and X-A. He passed away on February 15 at the Baker Memorial Hospital, where he had been for several weeks. Oscar had not been in very good health for several years, although he was able to continue with his business until quite recently. He spent recent months in Mobile, Ala., as development engineer for his company, Hollingsworth and Whitney, prior to returning to his home in Waterville, Maine, a short time ago. Oscar is survived by his wife, Martha, and two children — Elsa, who is 12, and Eric, who is nine.

"Oscar's death was a great shock to me, as we had always been close friends. I had not been in so intimate touch with him for the past few years since he moved to Waterville. For many years he lived here in Belmont, not far from my home." — On behalf of the Class, our sincerest sympathy is extended to Oscar's family.

What are you doing and what do you hear from others? Remember that the Alumni Office will forward your mail to men in the services. Share your replies with all of the Class by sending them to your Assistant Secretary. — RAYMOND A. ST. LAURENT, *Secretary*, Rogers Paper Manufacturing Company, Manchester, Conn. CAROLE A. CLARKE, *Assistant Secretary*, Federal Telephone and Radio Corporation, 1000 Passaic Avenue, East Newark, N.J.

1922

The annual Alumni Dinner at the Hotel Statler on January 30 was a most enjoyable affair, as always, and particularly so for '22. A sizable group of 20-odd classmates get together each year for a small-scale reunion. It is a pity that others of our Class who live in the vicinity of Boston do not make an effort to attend the Alumni Banquet, and we warn them once more that they do not realize what a good time they miss. Whitworth Ferguson came on from Buffalo, and the official meeting place for cocktails before the banquet was in his suite at the Statler.

A. J. Browning, a colonel, the worthy President of our Class, did himself proud in a speech before the Sales Executives Club of New York on February 9. He gave a clear picture of Army renegotiation of contracts, and in the question period following his speech he answered one of the questions in such a vigorous, straightforward manner that the audience broke into spontaneous applause when he had finished his answer. His remarks were prominently quoted in the New York papers the following day.

Tommy Berlage is now with the United States Maritime Commission in Washington, having been drafted to duty in the production section by Colonel Rockwell, director of production, who is also chairman of the board of the Standard Steel Spring Company, with which Berlage has been associated.

Stanley Hartshorn has written in that Richards J. Bard is in Australia as a major in the Army Engineers. He reports that Bard was in Palembang, Sumatra, working for the Standard Oil Company, at the time the Japs attacked. After destroying the refineries, the Standard Oil men left for Java, while the Dutch Army held off the Japs. Bard, along with so many others of our Class, will have plenty of stories to tell when he returns to civilian life.

Bill Mueser reports that the 1922 scholarship fund now amounts to $3,125. This is a pretty fair start, although it is not so good as it could be if you visualize the potentialities of our Class. By all means, don't forget about it, and whenever possible send a check to Mueser or direct to Horace Ford at the Institute. A steady stream of contributions to this worthy cause will result in a substantial sum by 1947. — CLAYTON D. GROVER, *Secretary*, Whitehead Metal Products Company, Inc., 303 West Tenth Street, New York N.Y. WHITWORTH FERGUSON, *Assistant Secretary*, Ferguson Electric Construction Company, 204 Oak Street, Buffalo, N.Y.

1923

The Class was well represented at the Alumni Dinner at the Hotel Statler on January 30. We spent an enjoyable evening renewing old friendships and promising ourselves a grand reunion when the the war is over. The following were present: Clarence H. Chaisson, Richard H. Frazier, Ernest N. Gelotte, Harold B. Golding, E. Louis Greenblatt, William B. Greenough, Jr., Franklin K. Haven, Donald W. Height, George R. Johnson, John J. Murphy, James A. Pennypacker, Gerald Putnam, Edward C. Rue, Howard F. Russell, C. Frederick Smith, Jr., Philip C. Smith, Allard M. Valentine, Dale E. Washburn, Samuel L. Williams, Elton W. Willis, and John H. Zimmerman.

Mr. and Mrs. Richard H. Frazier report the arrival of Cornelia Skilton. We congratulate them on the blessed event.

We regret to report the death of Edmund Turney Allen, II, on February 18 in a crash of a four-motor bomber at Seattle, Wash. Allen was a test pilot for the Boeing Aircraft Company and was considered one of the most experienced test pilots in America.

1923 Continued

Our Secretary, Horatio L. Bond, will probably be back in this country before you read these notes. He will have many interesting experiences to tell.

The Acting Secretary is radio aide for the town of East Providence, R.I. Recently the town staged a full-scale air raid drill with all land wire communications declared out of service. Let us all hope that no community will ever be bombed, for if such a disaster should ever happen and the telephones were taken out, there would be the greatest confusion that anyone can imagine. No one realizes how dependent we are on the telephone until we are deprived of it.

Jack Keck's old pal and roommate at school, Stuart MacDonald, X, has been with the frosted foods division of the General Foods Corporation for many years. Research and study took him to Gloucester, Mass., to Florida, and then to Rochester, N.Y. He and his family have lived for some time in each of those places. Our correspondence shows that Mac's current address is 710 East Buchanan Street, Harlingen, Texas, where his work continues as before. His eldest son is now attending the University of New Hampshire, since Mac's home state was New Hampshire.

The third member of that freshman-sophomore triumvirate was Oscar L. Perkins, who has been with the Aetna Casualty and Surety Company in Hartford for several years. Last spring we reported O. L.'s entrance to the United States forces and his visit to Jack Keck at Bloomfield while he was stationed at Fort Monmouth, N.J. Of course, he had his Reserve Officers' Training Corps commission from school days to start. About June 1, he was sent to Camp Edwards in Massachusetts and in June, with a captain's rating, went to England. After spending the summer and fall there, his next move was to Africa to be among those present in Uncle Sam's big offensive in November. His record there has been commendable, we are sure, since word has recently come of his advancement to the rank of major. He may be addressed at A.P.O. 302, New York City.

Chemical and Metallurgical Engineering for last December bears out what The Review stated in brief in the Alumni and Officers in the News section of the February issue. The article stated that Charles A. Thomas, who was at the Institute with us, receiving his master's degree in 1924, is a director of the central research department of the Monsanto Chemical Company and had been elected to the board of directors of the company.

Others of us carry on our daily routine faithfully to insure for Uncle Sam the full co-operation of those of us still here in the United States. A special mission which took Miles Pennybacker, VI-A, and his family to Connecticut last fall, has now materialized to definite unit operation for manufacture. Miles is general manager of a plant for Machlett Laboratories. He makes his home in Westport. — HOWARD F. RUSSELL, *Acting Secretary*, 71 Catlin Avenue, Rumford, R.I. HORATIO L. BOND, *Secretary*, 457 Washington Street, Braintree, Mass. JOHN M. KECK, *Assistant Secretary*, 207 Bloomfield Avenue, Bloomfield, N.J.

1924

The majority of address changes which have come to the Secretary during recent months have resulted from entries into the armed services, promotions, and so on, which are adequately covered in the M.I.T. Men at War section of The Review and hence are not included here. We must, however, mention that Frank McSherry, a brigadier general, former director of operations for the War Manpower Commission, has been called to active duty with the Army. Our former diligent New York correspondent, Bill Correale, has not been heard from by the Secretary since he became a captain in the Army Engineers many months ago.

Jimmie Doolittle, as you may have read in the newspapers, was chosen at the Alumni Dinner to head the Tokyo Club next year, since he is expected to call there before long.

Don Kennedy has left Mexico, where he has been for a long time, and has moved to Mt. Lebanon, Pa. Joe Naughton has transferred from Southbridge, Mass., to Cumberland, Md.; Sam Helfman from Texarkana, Texas, to Pittsburgh; and Paul Keppler from Massachusetts to Scarsdale, N.Y. George Parker, whom the Secretary sees in Boston occasionally, is associated with Bigelow, Kent, Willard and Company at 75 Federal Street. Bob Fellows is now a professor. His address is Box 826, State College, Pa. George Swift, a member of the Department of Metallurgy at the Institute, was married in December to Marjorie Quinlan '41.

Since the Secretary expects to be away from Boston for a while, George Knight will act as his assistant in the preparation of notes. He will welcome news from you. — FRANCIS A. BARRETT, *General Secretary*, 195 Broadway, New York, N.Y. GEORGE KNIGHT, *Assistant Secretary*, Elliott Addressing Machine Company, 143 Albany Street, Cambridge, Mass.

1926

Most of the reports coming through on '26 men have to do with changes in military rank, and there is an impressive number of these.

In December, for example, Whitney Ashbridge became a lieutenant colonel and Robert W. Daniels a colonel. William R. Franklin is now a lieutenant commander; Joseph C. Huske a commander; Harry Jenkins a major in the Air Corps; Dale Quarton a commander at the Norfolk Navy Yard; John Jacob a Major; Willard McCornack a major; Joseph D. Bates, Jr., a captain in the Army; Herbert T. Creedon a lieutenant in the Navy; and Kenneth E. Hill an Army captain.

Elmer Warren has left his job as registrar and personnel director at Colby College in Maine and is now a captain in the Army. He is stationed at Orlando, Fla. Robert E. Mattson, who was with the Northern Pacific Railway Company, is now a major in the Army. Reports have him in far places still applying his experience as a railroad man [see Mail Returns, this issue. — *Ed.*]. — JAMES R. KILLIAN, JR., *General Secretary*, Room 3-208, M.I.T., Cambridge, Mass.

1932

At last we have a bit of very much appreciated information from one of our classmates. Lester Glickman wrote from 510 Four Mile Run Road, Alexandria, Va., that he is now in the Navy Department in Washington, D.C., as an industrial engineer in the Bureau of Ordnance. He was married in Boston about two years ago and is now living in Alexandria with his wife and baby daughter. Les writes that Leland Burr is at the same bureau and is a lieutenant, senior grade, and that Jack Kimble is there as a physicist. Bob Fyfe is with the Navy Department, too, and is in the Bureau of Ships. Apparently there are dozens of Technology men in the Navy Department in Washington, but so far Lester is the only one who has crashed through with any pertinent information.

On our way to Washington a few months ago, we met Nick Rothenthaler. Nick is married and is employed by the Ford Motor Company as metallurgist in the armor-plate division. As a matter of fact, as we remember it, he is chief metallurgist. Nick told us that Bill Holst is back in this country. You may recall that the last we heard from Bill was that he was with the Standard Oil Company of New Jersey at Pelembang in the Dutch East Indies. He apparently is still with the same company. We haven't received any communication from him since he returned to this country other than an announcement of his marriage about two years ago.

In these times, personal notes are more interesting than ever before, so why not give your classmates a break and run off a few lines to Chippy Chase or Bill Kirkpatrick? — CLARENCE M. CHASE, JR., *General Secretary*, 1207 West 7th Street, Plainfield, N.J. *Assistant Secretaries*: CARROLL L. WILSON, 1530 P Street, Northwest, Washington, D.C.; WILLIAM A. KIRKPATRICK, Allied Paper Mills, Kalamazoo, Mich.

1938

Our fifth reunion turned out to be a great success. We had a get-together upstairs in the Statler before the Alumni Dinner. Then on Sunday most of the gang met at the Brittany Coffee Shop for a fifth-reunion dinner. Although this was no pretentious outing, at least a good many of the boys made an effort to get together. Here's the news on some of those who attended.

Bill Whitmore, Don Severance, Ascher Shapiro, and your Assistant Secretary are still walking the corridors of the Institute for one reason or another. (Yee Jing Liu and Ernie Neumann are also in this group, although they could not be on hand.)

Herb Wiley and Al Wilson are cozily settled in Lexington, along with their good neighbor, Ab Byfield. John Bethel,

1938 Continued

a captain, and his wife came up from New York for the week end, while John Mahoney rolled in from New Jersey. Sid French, his wife, and Frank Atwater made up the Connecticut contingent. Sid is with Bridgeport Brass while Frank is still with Fafnir Ball Bearing Company in New Britain. Smith Toulson breezed all the way in from Denver, where he's working on a special quality-control assignment for Remington Arms. Of course, he did come east to visit the Lowell plant, but fortunately the time of that visit coincided with our reunion.

As for all those fellows who didn't manage to get to the reunion — well, we've got an awful lot of dope about them anyway. A number of the boys, we discovered, are now way off in various parts of the world. Charles R. Mills, a captain, has been over in North Africa since the start of things there. He is with an engineering battalion. Hillary J. Fisher is in England with the Army Signal Corps. And on the other side of the world, Charles F. Connor, an Army lieutenant, is in the Solomons. Charles, by the way, is engaged to Laura E. Roy of Brookline. Richard H. Howe is with a Navy construction battalion in the southern Pacific.

Jack Robbins, a second lieutenant in the Air Corps, had quite an adventure when the plane in which he was copilot crashed into the Mediterranean. He and six others were afloat for three days in a leaky rubber lifeboat during one of the sea's worst storms in years. They were finally picked up by a Royal Air Force rescue launch which itself was disabled and almost capsized. But all the men came through the experience safely.

Paul Black writes that December was a momentous month for him, for he became both a captain and the proud father of a boy. Carle McEvoy, Jr., is likewise a captain (in Army Ordnance). He is head of the Fort Wayne suboffice, and has two children — a daughter one and a half years old and a son all of two months old.

Bill Purcell is in Washington as munitions and supply officer for the department of munitions and supply of the Canadian Government. Also in Washington is Johnny Cook, a captain in the Signal Corps, who is in the facilities branch, as head of the production equipment section. There, too, is Russ Coile, also a captain of the Signal Corps. Russ has just returned from two and one-half years in South America. He was married while in Peru to Margaret Ledig of Washington. Joseph E. D'Angelo has been in the Army since July. He was married in December to Mary K. Richardson from Shamokin, Pa. Just to be different, King Coombs, a captain with an A.P.O. New York address, writes that he's still single and will probably hold out that way the longest. There's a challenge for you, Gilliss.

News from the boys in the Navy is that Bill Towner is in V-7 engineering officers' training course as a midshipman at Annapolis. B. H. Gere is also at Annapolis as a lieutenant (junior grade) in the postgraduate school. Lieutenant Bruce Old is in Washington in the Office of the Secretary of the Navy. He has recently welcomed an addition to the family — a son born on January 16.

Dave Wright sent us word that he's a lieutenant (junior grade) and has been in the port director's office for almost two years, but, says Dave, "I'm getting a bad case of the itching foot, and I don't mean ringworm."

Fred Crocker and Francis Comins are naval aviation cadets, while Wes Cilley is an Army cadet. Fred and Fran are both at Pensacola, and Wes is at Yale. Robert Englander is an ensign in naval aviation and soon expects to be teaching aviation cadets to fly. Jack Wilson writes that he was married in July to Ruth A. Dwyer. Jack was for some time assistant air force engineer at Mitchel Field. At present he is at Fort Belvoir taking a field officer course. Nick Barbarossa, a first lieutenant, was also at Belvoir attending another course.

We have a lot of news, too, from the men in industry. Fred Strassner and Norris Barr are both in the propeller division of Curtiss-Wright. Carl Abel is trotting all over the country doing field service work for Pratt and Whitney. At the naval aircraft factory in Philadelphia, Haskell Gordon is aeronautical engineer in charge of experimental structures. In the same city is Jim Evans, with the Catalytic Development Company, and Lloyd Bergeson, who is still with Cramp Shipbuilding.

John Sullivan is northward bound, going up to Edmonton, Alberta, on a job for the American Construction Company. Bill Burrall is still with the Automatic Electric Company, but he has moved to Chicago. He also sends us the information that John Summerfield is an ensign at the naval training school in Tucson.

Word from Greer Ellis is that he's working for the Magnaflux Corporation on new developments, and that he has a son born in September. Another prospective Tech '64 man is Thomas Brod, son of Bernard Brod. Bernie is married to Alice Stoller, Smith '39, and is working with the Suburban Air Conditioning Corporation on heating, ventilating, and air conditioning in war plants. Joe Klaber writes that he's been busy "washing diapers for Karen, age 6 weeks" and when not doing that is in chemical research at the Quaker Chemical Products Corporation. He is married to the former Dona de Pasquale of New York City. John Craig is with the Bell Telephone Laboratories, as is George Thomas. Freddie Ray is doing research work for Socony-Vacuum. Robert Flynn is also at Socony, in the patent division.

Eric Olsen is now a field engineer with the Lawrence Engineering and Research Corporation of Linden, N.J. He says a lot of their work is concerned with boats. Ralph Lebow is a special engineer with the same company.

Dick Cole is down in sunny Florida doing research work on the synthetic rubber program, and Harold Butler is doing the same sort of work for Standard Oil at their Bayway refinery. Also in Florida is Leo Goldshlag, who is assistant naval architect in the office of the supervisor of shipbuilding. At night he is teaching a class in engineering drawing and one in statics and kinetics at Tampa University.

Ted Lisberger is at General Electric in the aeronautics and marine engineering department working on aircraft armament, while Jim Gilliss is assistant to the outfitting superintendent at the Federal Shipbuilding and Dry Dock Company in Kearny, N.J. From E. W. Lovering we hear that he's busy as metallurgist for Revere Copper and Brass in Detroit. W. S. Shamban says that he's "still trying to make resins with the Strook and Wittenberg Corporation."

Those of our Class who can't get away from academic life are Eric Thrift, who is teaching in the department of architecture at the University of Manitoba; Robert Campbell, who is teaching at Harvard in a course in electronics for Army and Navy officers; and Yale Brozen, who is assistant professor of economics at the Illinois Institute of Technology. Yale, by the way, is also a specialist with the Army Signal Corps, and in addition, is in line for congratulations, having received his Ph.D. from the University of Chicago in December. Nice Christmas present.

We have a few boys working for the government, too. Gus Rossano, Jr., is with the Washington State Department of Health; Mert Barrows is busy with the Federal Public Housing Authority in Lexington, Mass.; Henry Mudd is in the War Production Board as chief of the fluorspar and magnesite section of the mica and graphite division; and Dave Beaman, his wife, and one and one-half year old daughter are down at Duke University, where Dave is a member of the Division of Physical War Research. Scott Lyon, after spending two years in Lisbon, Portugal, as vice-consul, is now in charge of the United States consulate at Horta, Fayal, in the Azores.

And the last, but nevertheless important, bits of news are that Mr. and Mrs. Frank Gardner have announced the birth of a son on January 21 and are now back at Mahwah, N.J., and that Geraldine Riggs, who attended the Pasadena Junior College, has announced her engagement to Bernard Rice who, after spending some time at Technology, received his degree in engineering from the University of Southern California. — DALE F. MORGAN, *General Secretary*, 6 Avon Road, New Rochelle, N.Y. RICHARD MUTHER, *Assistant Secretary*, Room 1-180, M.I.T., Cambridge, Mass.

1939

Herb Stewart, VI-A, started the New Year off with his wedding on January 9 to Mary Louise Barrett at Bellevue, Pa. Herb is a lieutenant in the Army. Don Timbie, an ensign, is another benedict. He was married on December 26 to Barbara McCall Buchanan.

Richard Sears is still in the process of receiving congratulations on the birth of

1939 Continued

a son, Richard Irving Sears, Jr., at Newport News, Va., on December 15. — Taking the press clippings as they come, we find next that Elmer DeTiere has become engaged to Frances Jeanne Boswell. The couple plan to reside in Paterson, N.J. Our one-man gym team, Dom Donatello, having been commissioned in the Air Corps after training at Jefferson Barracks and Chanute Field, is to be known henceforth as Lieutenant Donatello.

The fame of Lieutenant Fred Sheldon as a director, producer, and author is spreading because of his theatrical association with the United Service Organizations. — After receiving his master's degree at Technology a couple of years back (are we getting that old!), Ernie Kaswell recently became engaged to Yolande Marilyn Romsey of Brighton. — Courtesy of Carole Clarke, Secretary for the Class of '21, comes the news of the wedding of Bob Laird, XV, to Rosemary Keen of New Orleans.

Dick Kaulback, now working as a metallurgist for the Holcomb steel division of the Crucible Steel Company of America, was married last November to Mary H. Smith of Syracuse. After a trip through New Hampshire and Massachusetts, the couple settled in the Plaza Apartments, Syracuse.

In a news release from Randolph Field, we learn that Lawrence J. Fabacher, a lieutenant, is completing his nine weeks of intensive training preparatory to becoming a pilot. — And, not to be outdone by Dick Sears, Mr. and Mrs. R. Evan Pancake announce the arrival of Edwina Howard Pancake last November 10 at Butte, Mont.

A letter from Dick Leghorn, a captain at the officers' training school in San Antonio's aviation center, reads as follows: "A word or three, old fella, from one who has sinned copiously during the past few years in the matter of letting you know what gives and has given in the life of this classmate. I have just read my November Review, and the pangs of guilt have sent me racing over to bat out a few cheery words of greeting.

"There has been no particular glamour attached to my own history since June of 1939, although circumstances have been such that I have become convinced that there is a lot of fun to this business of living. I'm still single, but to be perfectly honest, I should say waveringly so. If it weren't for the war, I believe we'd have another good beer drinker gone to seed. As you may remember, I hiked off from school to Rochester, N.Y., to work for the Eastman Kodak Company. After a year and a half with that wonderful outfit, during which I slid from purely experimental work into the more technical side of the business, the powder makers at Picatinny Arsenal began making advances toward Ordnanceman Leghorn. Not being exactly wild about the business of explosives, I ducked and landed a very nifty assignment with the Air Corps at Wright Field. For a year, I wandered in and about the experimental engineering section, contributing my two cents' worth where I could. Then production engineering and some of the supply and maintenance sections borrowed me because I knew a little about aerial photography. About a year ago — in fact, just a year ago — when the radios were letting us in on the hell at Hawaii, I got the bug to do a little shooting myself. It took all of ten months to get out of Wright Field down to these flying schools, but here I am now, doing my best to become a red-hot pilot. So much for Leghorn.

"Nickie Carr left for the Caribbean area early this summer, but I haven't heard of or from him since. It seems that every place I go, I run into some of the lads, but now that I would like to shoot you some real low-down, I just can't seem to recall any. Bob Wooster was graduated from the photography school at Lowry Field and then was assigned to an observation squadron. I haven't heard anything of him since then either. Durb Woolford, Lee Hall, and Bus Emerson pulled into Dayton before I left. They are also giving their all as engineering officers for the good old Army Air Forces.

"Next time I run into one of the boys I'll drop you a card, and we'll see if we can scare up a little more news for you this next year. We're certainly being scattered enough geographically, and a good long column under 1939 will go a long way toward making this distance seem shorter." — Many thanks, Dick.

George J. Laurent, a lieutenant, junior grade, in the Naval Reserve, recently became engaged to Fontaine Mann, a graduate of Bryn Mawr and Goucher colleges. Phil Epifano, a lieutenant stationed at Fort Benning, Ga., has announced his intention to marry Martha Lynch of Louisville, Ky. According to the picture in front of me, Kentucky still does a right good job.

In the Winthrop news, note is taken of the promotion of Ralph S. Woollett to first lieutenant. Ralph had formerly spent some time in England working in radio signal work with the Royal Air Force.

The following list of men are now in the services holding the ranks indicated: George Beesley, X, Kenneth G. Bell, XII, A. Lawrie Fabens, II, Henry L. Fober, X, Lee C. Heroman, Jr., X, Minard A. Leavitt, VI, Winthrop B. Reed, X, John A. Ryan, Jr., XIII, Paul N. Stanton, II, John F. Stiff, V, Wallace P. Warner, IX-B, and Howard M. Woodward, XIII-C — all Army lieutenants; Joseph J. Donovan, V, William E. Haible, IV-A, Charles H. Hoffman, VI, Robert W. Pastene, X, and Edwin K. Smith, Jr., II — ensigns; Donald L. Herr, VI, William R. Hydeman, XVIII, and Daniel F. Rex, VI — Navy lieutenants; C. William Guy, XVI, B. Allen Monderer, VI, Harold R. Seykota, XV, Winthrop M. Steele, VIII, Oswald Stewart, 2d, II, Ralph W. Tucker, Jr., II, and William R. Willard, XVII — captains; Pierre M. Honnell, VI, and Alexander J. Stuart, Jr., II-AO — majors; Denys W. Knoll, XVI, a lieutenant commander; and Floyd A. Hansen, II-AO, John H. Kerkering, I-AE, and Robert W. Meals, II-AO, lieutenant colonels.

Dick Cella writes, à la V-mail: "I became engineering officer for the outfit, and I have really been learning a lot of what it takes to keep a squadron of the stuff we have in the air. Soon, two of my buddies and myself are going on a trip to Sydney, which is to Australia what Paris was to France in the last fracas. It's really the only place to go."

We have just run across a feature article from the Seattle, Wash., *Times* about Mr. and Mrs. Bob (XVI) Withington, who are described as a young couple who love the West. After graduation, Bob spent some time as an assistant in the Department of Aeronautics at M.I.T., following which he entered the flight and research department of Boeing Aircraft. Mrs. Withington is the former Elizabeth Merrow of Boston.

A letter received from Mrs. Wilbert Bjork reads as follows: "We were married on December 26. I am a graduate of the class of '40 of the University of California. Shortly after our marriage, Bill left for overseas. He has not returned at any time and writes that it is most probable that he won't be able to return for the duration. He has been in many of the main battles of the South Pacific. Incidentally, Bill left for overseas with James W. Greely, also a lieutenant, but after a few months Bill's duty carried him farther away. Before Bill left, he was kept pretty busy with packing, getting his affairs in order, and flying to Reno to marry the girl he'd been going with for a year or so." — Let's hear from some more of you wives who may be able to shed a little light on the activities of your much too modest husbands.

From Al Rugo, we have the following bits of news: "I'm still doing structural static testing for the Navy as a civilian in the naval aircraft factory. As you might imagine, we are trying madly to keep abreast of the Navy's procurement program. I am now teaching a defense course in aircraft engineering at the Drexel Institute of Technology. Swannie Swan was down here about a month ago. He told me that he now is chief stress analyst for Fleetwings. Last summer, Don Scully, a lieutenant, junior grade, told me all about life in the Navy. Ed Skralskis is now a lieutenant in the Army and is doing static testing at Wright Field. Our letters are full of knocks about the other's poor static-testing technique.

"Some time ago I read in this column about one of our classmates who claimed his daughter was the apogee of all womanhood. Having attempted to look up the meaning of the aforementioned word, I am still not too sure, but will you find his name for me, since I'd like to compare my daughter's greater qualifications for the title."

When last heard from, Pete Bernays was stationed near Spokane, Wash., as an assistant chemical officer. — And not to be outdone by all you birds I report on so infrequently, your Secretary has managed to get engaged also — to Arlyne Reilly of Fairfield, Conn. More news later. — STUART PAIGE, *General Secretary*, 232 Golden Hill Street, Bridgeport, Conn. ROBERT C. CASSELMAN, *Assistant Secretary*, 271 Cypress Street, Newton Center, Mass.

1940

From the Washington, D.C., *Times-Herald*, we quote the following: "Fourteen men from the District, Maryland, and Virginia are among 459 American soldiers who are held prisoners of war by the Japanese in the Philippine Islands and Formosa, it was announced yesterday by the War Department. Among them is Lieut. Walter H. Farrell, son of Lieut. Comdr. LeRoy F. Farrell, at one time on duty in the Navy Department's Bureau of Navigation and now serving with the Pacific Fleet. Lieutenant Farrell is listed as being held in the Philippine Islands, camp unstated." — That Hap is alive is great news for all of us, and especially for those of us who grew to know him well through the years at the Institute.

Harry Sedgwick, a lieutenant, got a letter through to me. He left the States several months ago and tells me that he celebrated Christmas eating pineapples after a nice refreshing swim. Harry says it reminded him of Christmas in Boston! He regretted the censorship, as it necessitated much idle chatter.

Dugald C. Jackson, 3d, whom many of the dorm residents will remember, dropped me a card saying that he had been in the Navy as an ensign since last June. He was first located in Portsmouth, N.H., but is now taking a course in naval architecture at the Naval Academy. He was married on September 12 to a Wisconsin miss.

A letter from Norman Klivans, a captain, tells me that he didn't get to New York University after all, but was shipped to the University of Chicago and is now studying new meteorological developments. He says: "Bob Davis, a lieutenant, is still in New York, according to latest information. Dave Jacobson, an ensign, was at Dartmouth being oriented to the Navy, the last I heard from him. Bob Deutsch is doing very well with the local ordnance office as a chemical engineer. Art Frankel is also in Chicago, working for some sort of an electrical equipment manufacturing company." Norm wants to hear from some of you X-A fellows.

George Wirkowsky, an ensign, entered the Navy on September 14 and reported to the naval training school on the campus of the University of Wisconsin for ten weeks of intensive training in the maintenance and operation of Diesel motors. Previous to being commissioned, he was a mechanical engineer at the Los Angeles Shipbuilding and Drydock Corporation, San Pedro, Calif. Upon completion of his training he will be assigned to duty aboard units of the fleet powered by Diesel engines.

Arnold Arch is now a captain and is stationed at the Niagara Falls plant of the Chemical Warfare Service. — John Morrison has been promoted to the rank of major. He earned his master's degree as a member of our Class. — J. H. Hollomon, a first lieutenant, is now head of the physical metallurgy section of the Watertown Arsenal. — Philip A. Stoddard has been promoted to the rank of captain. — Nelson Hogg is stationed at the military camp in Petawawa, Ont., as a lieutenant.

Rowland Peak writes that he became a father last July. His daughter's name is Sally. Rowland is still with Illinois Central Railroad at New Orleans. — Last June, Evelyn Braunworth became Mrs. Robert McKinley. Margaret M. Golden became Mrs. John Allen Berges in December. Elizabeth Rose is married to Robert Nelson Bonnett. Andrey Bayle and Shirley Elaine Diamond were married on January 27. John B. Dwyer and Jacqueline Houghton were married in December. Dwyer is a chemical engineer in the research department at Yale University.

Charles B. Fodale has been reported missing by the Navy Department. Lieutenant Fodale was gunnery officer aboard the light cruiser *Juneau* and was commander of the section to which the five Sullivan brothers belonged. He was assigned to the *Juneau* just before it was put into commission, and he had received two decorations within two months of service.

George R. Stone, a lieutenant commander, was en route from Honolulu aboard the Navy transport plane which crashed in the San Francisco Bay area in January. Stone did graduate work with our Class in Course XVI.

Excuse your Class Secretary, fellows, if he just pops a blood vessel some day when The Review asks him to write a news column with the material you send. I suppose nothing really exciting is happening to most of you. Humbug! — H. GARRETT WRIGHT, *General Secretary*, 1124 Greenwich Street, San Francisco, Calif. THOMAS L. CREAMER, *Assistant Secretary*, Room 3-208, M.I.T., Cambridge, Mass.

1941

Edward A. Beaupre was married several days after graduation. After a short honeymoon, he and his wife went to Wyandotte, Mich., where he had accepted a position with the Michigan Alkali Company. Two weeks later Ed received an Army order to report to the Aberdeen Proving Ground pending a definite assignment. Three weeks later he was sent to the Boston Ordnance Department. Promotion to the rank of first lieutenant came on February 6, 1942, and on last January 16, he received his captaincy. "Captain Beaupre is the proud father of a daughter, Roberta," says a letter from Mrs. Beaupre. — Stephen H. Kinney is serving as a lieutenant (junior grade) in the Naval Reserve. — Preston Gladding is now stationed in Mobile, Ala., at 1216 Government Street (quite patriotic). Ensign Gladding tells of his engagement to Margaret Waterman of Providence, R.I.

Press clippings tell us that Mario Conti took as his bride Ventura Ruggieri in Brooklyn on December 27. Funny how fast news travels. — The engagement of Marjorie Louise Hornbeck to Arthur S. Francis, Jr., an Army Air Corps captain, has been announced. Out on the West Coast, Walter Stoll took Gladys Dougall as his New Year's Day bride. On the East Coast, Joe Bowman, an ensign, took as his life partner Virginia Hope Reid, Wellesley '42. In the event you owe Joe a letter, you can reach him at Dumfries, Va.

Another skirmish on the marital front took place when Eleanor Fogg announced her engagement to Carl Oldach of Yale University and the Institute. Cecil Young, a lieutenant, who left our Class at the Institute to enter West Point, walked the aisle with Alice Meyer on the 21st of January. Promise to marry was entered by Vin Ferris and Doris Donoghue about the first of this year — the promise, that is, not the marriage. The Bridgeport *Herald* says: "Debbie O'Brien, daughter of Obie O'Brien will be a January bride, she tells us today, having definitely set the 9th as her wedding day with fiancé Frank Langhammer." Hardly thought we'd see the day when somebody would make up Frank's mind. Ho hum, nothing but marital advances and victories nowadays. The worst of it all is that we can say very little of what we hear about our boys in the mad mess across the ocean.

Jeanne O'Brien has announced her engagement to John Fleet of Boston College and the Institute. John is now a Navy lieutenant. A new way of putting it: "Nuptial vows are pledged" by Anne Lane Ross and Porter Evans, Jr. Both the bride and groom are working for master's degrees at the Institute. And from Cincinnati, we hear that Marjorie Potter and Don McDonald have reached an agreement of sorts concerning that walk down the church aisle.

We are proud to tell of the citation for gunnery training improvement given to Ed Hardway, a lieutenant, junior grade. Details of the improved method were not disclosed. Ed is stationed at Washington with the Navy Bureau of Aeronautics. Very nice going. — A note from Beaver Turnock tells of an impending marriage, if we may use the expression, in June. A card from Bob Alfred in the European theater wished us a merry Christmas about one month late. Les Gott is at Watervliet, N.Y., eating the taxpayers' money. But it costs cash to run a war, we must admit. — Let's have fewer news releases and more letters! — STANLEY BACKER, *General Secretary*, 46 Bicknell Street, Dorchester, Mass. JOHAN M. ANDERSEN, *Assistant Secretary*, Room 12-184, M.I.T., Cambridge, Mass.

1942

With April comes spring. So how about letting this column bloom with showers of letters — a rain of thoughts, dreamings, and rumors about yourself and your plans. Also send me the dope (while it's still hot) on other classmates. And how about letting a secret or two out about the Washington outpost, led by Hank Henderson and group; the Charleston, W. Va., cliff dwellers; and all the clan gatherings over the United States and perhaps even in a Guadalcanal fox hole?

In spite of the silence, news still manages to reach print here, somehow. Dick Wynne has just started work in the division of physical metallurgy at the Naval Research Laboratory, Washington, D.C. Word comes that Rodolfo Michels is shortly to leave Washington, where his mail has been going to the Chilean embassy in care of Ambassador Rodolfo

1942 Continued

Michels, Sr., to take up a mining job at Cananea, Mexico. His engagement to a Washington girl was recently announced. — Jack Jones, who left Technology on an appointment to West Point, is no longer a cadet there. He is somewhere with the Air Corps and is wearing a lieutenant's uniform. Jack's father, Albert M. Jones '13, a major general, was taken prisoner by the Japs in the Philippines.

Burt McNall, who left Technology in his junior year to join the Royal Canadian Air Force and was credited with sinking at least one Axis ship and damaging several others in the Mediterranean, has been listed by the Canadian Government as missing in overseas air operations.

John Mulvaney of Company D fame (Fiskin's Fighting Fools) was recently awarded a commission in the Coast Artillery from the officer candidate school at Fort Monroe, Va. Bill Rice, who received a second lieutenant's commission in December from the antiaircraft officer candidate school at Camp Davis, N.C., is probably on duty now at Camp Edwards, Mass. Jack Arend, also bitten by the silver-winged bug, has started flight training at Maxwell Field, Ala., and is now in the throes of preflight training. Charlie Dodson of Novar fame is now an ensign in the Naval Air Corps. He is stationed at Corpus Christi.

Christmas time offered many '42 men an opportunity to speed up the marital program. Dick Russell, a lieutenant, and Shirley Redfield, a Wellesley senior, walked to the altar in West Hartford, Conn., just before Christmas. Rodman Flinchbaugh and Ruth Jones announced their intentions for a duplicate procedure about a week later. Bill Schoen, also a lieutenant, and Hermione Tilson, Wellesley '42, also have definite plans for a future together. Bob McBride and Katy Lou Weaver of Charleston, W.Va., were married on February 26. At an open house which her parents gave to announce the engagement were such notables of Carbide and Carbon Chemicals fame as Ernie Artz, Harry Knox, Dan Hulett, Ed Yoder, Mal Anderson, Jack Collins, Ralph Kelly, Charles Cresap, and other '42 men. If the rest of the Charleston girls are what rumor has it, then watch for more news from this quarter!

Robert Chappelle, an ensign, and Ruth Trimble (also of the Washington social swing) have announced their betrothal. John McNall and Mary Rockwood were married on December 27 in Newton Center. Bernie Moulton, an ensign, who was graduated from the United States Naval Academy in the class of '43, is now engaged to Jane Thorn. No date is set for the wedding. Howard Hoffman and ex-Wellesleyite Mary Gray of Washington are possessed of marital intentions also. Bill Steinwachs, working in the engineering department of Wright Aeronautical Corporation in Cincinnati, has found time to select Frieda Eckert as his bride-to-be. Dan McKay and Alice Zell are also engaged. Roger Lindsey, a lieutenant in the Air Forces, and Lorann DeLap, a senior at Massachusetts State College, are betrothed. Neil Cogan and Mary Murphy of Regis College are planning nuptial ceremonies for some near date.

Your Secretary, at present at the aviation cadet center in San Antonio, is still curious about what Tech men might have been in this vicinity besides Eddie Edmunds, who was in pursuit of his wings as a student officer at Randolph Field when last heard from, and your Secretary, who still hasn't touched an airplane. I am hoping to be in St. Louis about the time this is printed, in case any "eager beavers" (to borrow a saying from the cadets here) are interested. — FREDERICK W. BAUMANN, JR., *General Secretary*, Orchard Lane, Golf, Ill. KARL E. WENK, JR., *Assistant Secretary*, The Graduate House, M.I.T., Cambridge, Mass.

1943

And now the Class of 1943 joins these time-honored columns. To your Secretary it seems that it was only a short time ago that he crossed the Harvard Bridge on his way to the Institute for the first time. He remembers vividly the sophomore "activity" in the dormitories; Field Day, when we lost only because the sophomores won; those first final examinations — what horrid thoughts! Then, too, he recalls Hell Week and his inability to sit down comfortably for a long time after that. The freshman year ended, he thinks of his first rush week, of "exercising" the freshmen before Field Day — and of Field Day, and how the poor freshmen lost! Then life seemed to settle down for a while until December 7, 1941, and he realized that he was living in momentous times. The Institute and his life there seemed to take on a new light, so that the need to do a job and to be a real part of a great work which would revenge Pearl Harbor rose paramount in his mind. Yes, the Class of 1943, with its accelerated program and graduation in February, four months ahead of time, can look back on those years at Technology with a feeling of "well done."

Unfortunately, as time goes on, the members of the Class become separated from one another, but the doings, the special events in our lives, and our successes remain of utmost interest to us all. It falls, therefore, to this column in The Review every month to relay the latest news to us all, from us all. It was too bad that your Secretary's appointment, delayed by the end-of-term rush, was not announced before the Class left the Institute. Now, however, I am formally introducing myself to those whom I did not have a chance to get to know at Technology and saying hello to the others. A word from you frequently about yourself and your friends in the Class will enable me to spread through this column the good word to all. My mailbox is large, postage stamps don't cost much, so let's have those newsy letters — and fast! So much for the preamble. Now let's turn to some news from the Class. From Bob Maxwell, we hear about the lads who were graduated in Course XIII. Bob himself is working at Hingham, Mass., while he waits for his call to the Navy, which should come in a couple of weeks. Al Brodie, Rus Goldberg, George Slifer, Dexter Bowers, Dick Henning, Henry Ferris, Dick Jouannet, Johnny Watts, Carl Bryant, and Hal Gershenow are all attending a Navy indoctrination course at Fort Schuyler, N.Y. On completion of the course, they will be graduated as ensigns. Bud Cruckshank is at the Coast Artillery school at Camp Davis, N.C., while Charlie Coles planned to join the Bethlehem Steel Company's plant at Fore River, Mass., as soon as he got through skiing.

Bob says that Carl Carlson is in New York with Gibbs and Cox "designing ships for the rest of us to build." Hank Tiedemann is also in New York and is with the Bethlehem Steel Company. Pat Goggin is situated with a Portland, Maine, shipbuilding company, and is apparently starting from the outside and working in, for we hear that he is doing a "yard job."

Another of the shipbuilders, Charlie Swet, is with the Cramp Shipbuilding Company in Philadelphia. Bill Maxwell and Oscar Wilhelm are on the West Coast aiding Henry J. Kaiser with his program, while Jim Goodhue, Dick Raven, and T. R. Thomas are aiding Uncle Sam at the Navy's reserve midshipmen's school at Notre Dame. We are pleased to hear that Malcolm Walker is recovering properly from an operation and that he will shortly be off to Notre Dame for his Navy indoctrination.

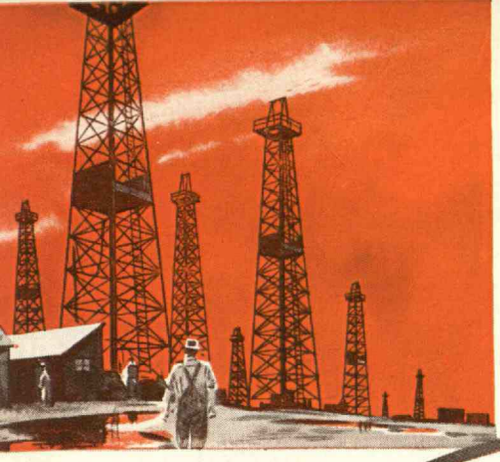
Special honors go to Walt Sutton for leading the 1943 Navy engineers into matrimony. He married the former Virginia Roach on graduation day. All the best to Mr. and Mrs. Sutton. Bob says he was sorry not to have any news of Maurice Evans, George White, and Lewis Johnson. Let's have a letter from you fellows so we can see where you are.

Talking of matrimony reminds us that Howie McJunkin married Mary Needles toward the end of February. Best wishes to you both from all of us.

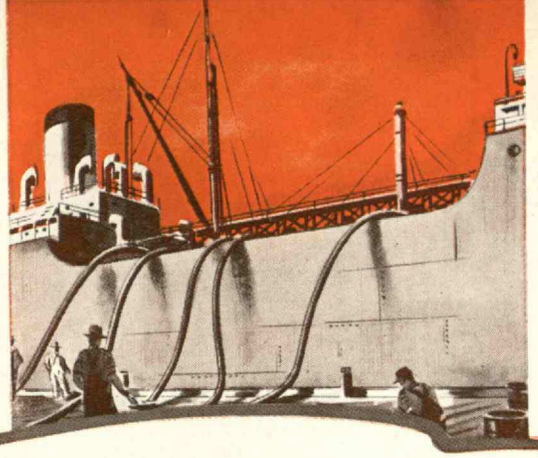
The war effort at Technology seems to have enlisted the services of many men from the Class. The list is long and at present incomplete, but your Secretary sees Jim Harker, Dick Childerhose, Frank Briber, George Schudel, Dick Haas, and Art Vershbow at frequent intervals.

Cal Dunwoody is overseas with the Red Cross, doing a much-needed job, while Gil Graves is with the Aluminum Company of America in New York. He is staying at the Phi Gamma Delta Club and says that "city life is just fine." We hear that Lamar Fleming is with the Army Air Corps somewhere in Texas and is just aching to get a crack at the real thing. — CLINTON C. KEMP, *General Secretary*, The Graduate House, M.I.T., Cambridge, Mass.

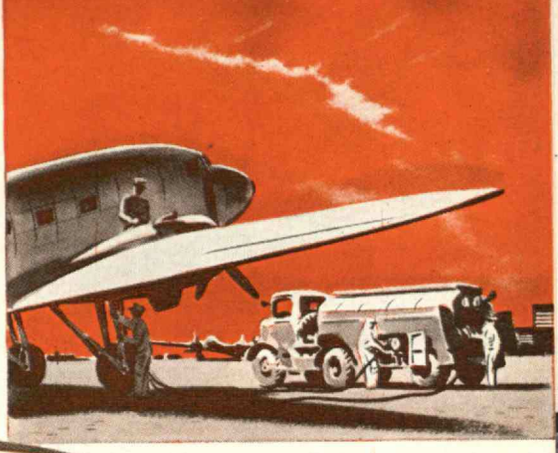
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Synthetic rubber facilitates well drilling. MANHATTAN oil-proof Rotary Hose and Molded Products, long used in all important fields. Tanker time is saved by use of synthetic rubber in Paranite G.O.P. Oil Hose.



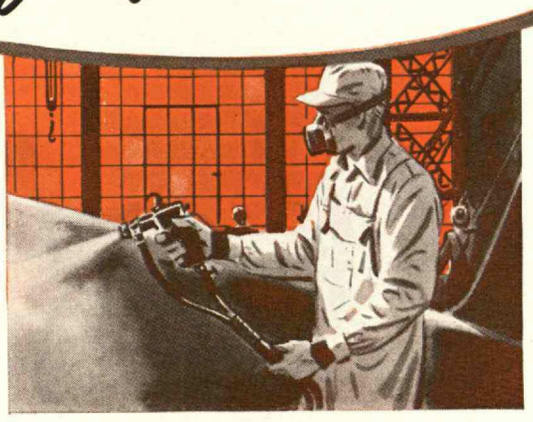
Long before Singapore



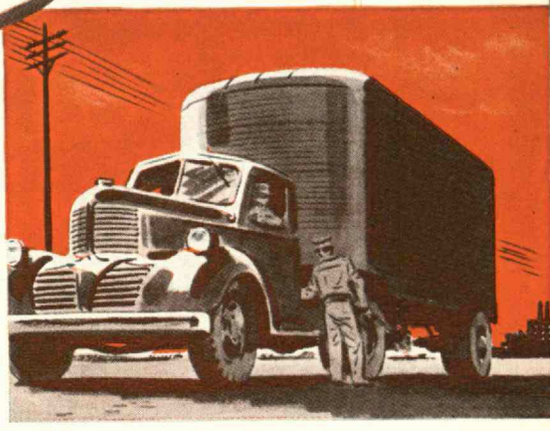
Synthetic rubber's most vital use is in airplanes—for fuel and control hose, in molded diaphragms, and in motor packings, of which MANHATTAN is a principal supplier.



Air-operated tools deliver steadier service with longer hose life when hose is lined with G.O.P. synthetic rubber.



Paint spraying speeds delivery of combat equipment. Only synthetic rubber resists action of paint and varnish.



Trucks, buses, tanks and jeeps, all have scores of oil-proof synthetic rubber parts to keep 'em rolling.

MANHATTAN was a Veteran in the use of *Synthetic Rubbers*

For years before the fall of Singapore, the use of several varieties of synthetic rubber was well-established in the manufacture of the products illustrated. These synthetic rubbers had special properties not possessed by natural rubber, such as: resistance to oils, sunlight and heat.

Because natural crude rubber was satisfactory, plentiful, and the supply seemed safe (Singapore was considered impregnable), no major (and costly) research and development programs to perfect and supply synthetic rubbers as a substitute had been initiated.

Under today's rising and tremendous program, widely publicized, vast quantities of *all-service* synthetic rubbers will be produced in months to come to replace natural crude rubber. Differences in physical characteristics, not easily recognizable to the layman, but of profound significance to the rubber technician, present highly diversified problems in the art of compounding and using these new *all-service* synthetic rubbers.

The accumulated experience of all manufacturers in the use of special-type synthetic rubbers is proving very valuable in building up the art of substituting these new synthetic types for natural rubber. The full and free interchange of information, fostered by Washington and the Industry, is speeding the results at a pace which should confirm confidence in the ability and talent of the Industry to turn out good, usable, often better, products for War and essential civilian needs.

MANHATTAN expects to further its already substantial contribution to this tremendous program of development through extensive facilities, engineering talent and a long and comprehensive experience in the use of special-type synthetic rubbers in its Paranite—G.O.P. products.

50th YEAR OF RESEARCH

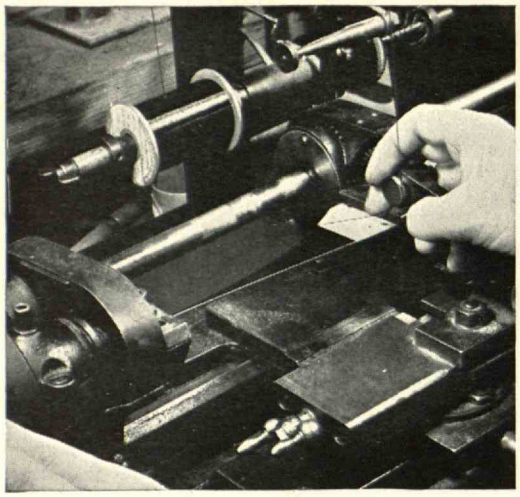
Pioneering in the developments and applications of synthetic rubbers was a natural sequence to the continuous program of research which has been inherent with MANHATTAN throughout the 50 years of its progress. To the long series of contributions to Industry, more will be added.

THROW YOUR SCRAP INTO THE SCRAP!

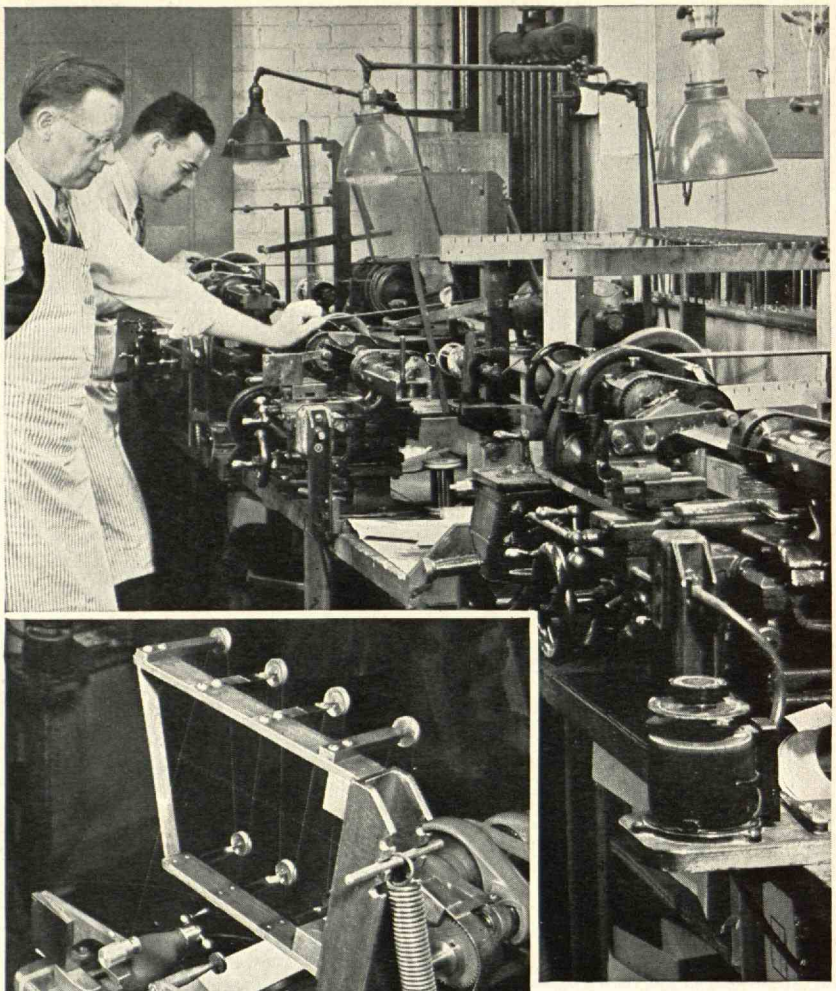
KEEP AHEAD WITH MANHATTAN

Thomas H. Boyd, '23 Wilder E. Perkins, '25
Charles P. McHugh, '26 Daniel J. Hanlon, '3
Albert W. Beucker, '40

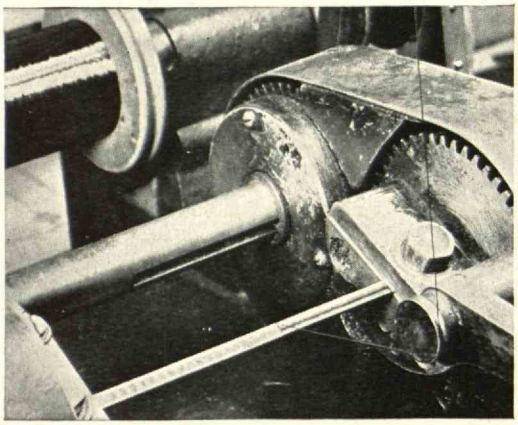
THE MANHATTAN RUBBER MANUFACTURING DIVISION
of RAYBESTOS-MANHATTAN, INC.
EXECUTIVE OFFICES PASSAIC, NEW JERSEY



Carefully rotating the last few turns of the lathe by hand avoids collapse of the winding on the steepest slope of cards with a logarithmic taper. These logarithmic units can be used *with* an external series resistor to obtain a truly logarithmic resistance, or *without* the series resistor to give the steepest possible slope to the resistance characteristic.



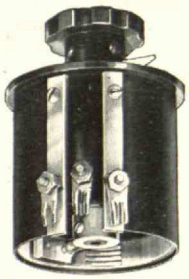
Although the winding of all resistance cards for General Radio potentiometers is essentially automatic, experienced workmen adapt the winding speed to each particular unit through Variac control of the motor drive.



Putting the *second* winding on an Ayrton-Perry, or non-inductive, resistance unit. This unit is used as the output control in a standard-signal generator operating at frequencies up to 50 megacycles.

Spring-mounted pulleys absorb variations in wire tension as the card turns. Constant tension is provided by a spring device on the shaft carrying the spool of wire.

How G. R. Rheostat-Potentiometers are Wound



Because all of our facilities are devoted to war projects, these rheostat-potentiometers are at present available only for war work.

The resistive elements are wound on flat fabric-base phenolic cards, which are then bent around molded cylindrical forms. To achieve definite resistance characteristics — linear, parabolic, or logarithmic — many sizes and shapes of cards are used. More than one size of wire on a single card necessitates abrupt changes in card width. For non-inductive units, two similar windings in opposite directions on a single card are necessary.

General Radio has developed winding methods and adapted standard lathes to produce all these various windings. Constant-tension devices and automatic feed insure precise control of winding. The finished resistance element has turns accurately spaced and presents a smooth uniform surface to the sliding contact. This results in long life and trouble-free operation.

General Radio instruments use a wide variety of these variable wire-wound resistors as calibrated controls in bridge and other measuring circuits. Originally designed for our own use, these rheostat-potentiometers are essential elements in many electronic instruments and are now widely used by other manufacturers of precise electrical equipment.

ARMY E NAVY

GR GENERAL RADIO COMPANY · Cambridge, Massachusetts

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